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22ND ANNUAL REPORT

OF THE

★Bureau of Mines
Mining and Mine Inspection

OF THE

STATE OF MISSOURI

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For the Year Ending December 31, 1908.

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Bureau of Mines, Mining and Mine Inspection

1908.

Coal Mine Inspectors.

Richard S. Thomas	Bevier	January 20, 1905.
Henry J. Hamil	Richmond	May 8, 1905.

Lead and Zinc Mine Inspectors.

Geo. K. Williams	Flat River	January 3, 1903.
Walter Ragland	Aurora	March 18, 1905.

J. W. Marsteller, Secretary, Jefferson City.

1909.

Coal Mine Inspectors.

Robert Richards	Bevier	April 15, 1909.
Michael Gavin	Lexington	February 15, 1909.

Lead and Zinc Mine Inspectors.

Chas. P. Wallace	Carterville	February 15, 1909.
W. S. Brown	Joplin	July 1, 1909.
I. J. Pirtle	Fredericktown	February 15, 1909.

Geo. Bartholomaeus, Secretary, Jefferson City.

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LETTER OF TRANSMITTAL.

State of Missouri,
Bureau of Mines, Mining and Mine Inspection.

To His Excellency, Herbert S. Hadley, Governor of Missouri:

Sir—The Mine Inspectors of the State of Missouri, have the honor to submit herewith the twenty-second annual report of the Bureau of Mines, Mining and Mine Inspection for the year ending December 31, 1908, embracing reports on the mineral product and the condition of the mines of this State.

This report covers the work of mine inspection during the year 1908, as performed by our predecessors in office, Messrs. Richard C. Thomas and Henry J. Hamil, State Coal Mine Inspectors, and Messrs. Geo. K. Williams and Walter Ragland, State Lead and Zinc Mine Inspectors.

The publication of the report was unavoidably delayed owing to the fact that much of the statistical information necessary for its completion had not been collected and compiled when the present Secretary, Mr. Geo. Bartholomaeus, took charge on May 1, 1909. The law requires mine owners, operators and lessees to report certain information pertaining to mines to this Department, no later than January 20th of each year. A great number of those required to make this report were delinquent, and, in an effort to get reports from all, complete returns were not secured until about the middle of July.

No reports of inspection made of the lead and zinc mines of the State, for the year 1908 appear in this report for the reason that no reports are at hand, the Inspectors having failed to make or file same with the Secretary. The Department is therefore not in possession of any facts regarding the condition of the lead and zinc mines during 1908, as the same relates to the health and safety of miners.

The statistical matter herein contained was compiled from the reports of mine owners, operators and lessees, and the figures covering the product of the mines of Missouri are as complete as it has been possible to collect them.

Respectfully submitted,

I. J. PIRTLE,
CHAS. P. WALLACE,
W. S. BROWN,
Inspectors of Lead and Zinc Mines.
ROBERT RICHARDS,
MICHAEL GAVIN,
Inspectors of Coal Mines.

By the Secretary,
GEO. BARTHOLOMAEUS.

TWENTY-SECOND ANNUAL REPORT.

The mining industry of the State was in no small measure affected by the general commercial depression which followed the financial panic of 1907. The reports of operators to this Department show that many of the smaller mines which operated in 1907, closed down entirely during 1908, and the big producing mines, with few exceptions, did not work full time. Low prices and a dull market naturally caused a reduction in wages, a decrease in the number of men employed, and a reduced production from the mining properties.

With extremely low prices on lead and zinc ores, the margin of profit to the operator was small even after a reduction of the wage scale.

But in no sense can this be taken to mean that Missouri has taken a backward step. To the contrary, under more favorable conditions than existed in 1908, the future has never looked brighter for the development of Missouri's vast and unexcelled mineral resources. Further than a decrease in production, resulting from a financial panic which affected every industry and every state, the mining industry of Missouri suffered no loss.

With improved market conditions, and with restored confidence in the business world, activity in the mines was resumed, and an increased output resulted. Mining properties were improved, new machinery was installed, and interest in mining was revived generally, by the search for new ore bodies and the development of new coal fields.

LEAD AND ZINC.

The Southwest district has again the distinction of holding first place in zinc production in the United States, and this too, under the most adverse and discouraging conditions the district has experienced for many years. Any attempt to discredit steady advancement in the Joplin district falls to naught when the facts are laid bare, and the conditions are fairly considered.

The district severely felt the panic of 1907. The depressed business conditions resulting therefrom had a direct influence on the metal market. Ore prices fluctuated with a downward trend, until a base was reached which established a record for low prices —the lowest in six years. The large accumulation of spelter carried over from 1907 had its influence on the ore market. This condition prevailed throughout the first eight months of the year. In addition thereto, the district carried the burden of competing with the cheaply mined ores of Mexico, against the importation of which, a protective system provided no protection. Add to all this the appearance of zinc ore from the Rock Mountain district, and the cause and effect is so plain that a reduction in the output in the Southwest district in 1908, is no surprise.

The conditions existing in 1908 are best illustrated by comparing the lead and zinc prices of 1908 with those of 1907.

The average price per ton received for zinc ore in 1908 was $32.27 as against $42.12 in 1907, a decrease of $9.85 per ton; lead ore averaged $48.08 in 1908 as against $68.31 in 1907, a decrease of $20.23 per ton. The average prices received for both lead and zinc ores in 1908 were the lowest for these metals since 1904. That under such conditions the mines would not be worked to their fullest capacity is self-evident.

The total tonnage of all grades of zinc ore produced in the Southwest district in 1908 was 193,860, against a production of 223,501 tons in 1907, a decrease of 29,641 tons. The total tonnage for lead in 1908 was 35, 283, against 38,315 in 1907, a decrease of 3,032. The total value of zinc ore mined in the Southwest district in 1908 was $6,313,023, as against a total value of $9,022,541 for zinc ore in 1907, a reduction of $2,709,518. The total value of all lead ore mined in the same district in 1908, $1,917,655, as against $2,614,123 in 1907, a decrease in value amounting to $696,468. The total value of lead and zinc ore of all grades mined in 1908 was 8,230,678, while in 1907 the total value reached $11,636,664, showing the loss for 1908 to be $3.405,986.

It is, however, surprising that any new development work and mine improvement work was undertaken during 1908. But the mine operators of the Southwest district are optimistic, and they have confidence in the possibilities of the district under more favorable conditions.

The panic may have halted underground development for a while, but with better ore prices toward the close of the year, mining operations were resumed in many old mines, and new ground was developed. Advancement was made into new territory surrounding the old developed area, which promises to be rich in production, and to help swell the output for 1909.

The line of new prospects stretches through Reedes, Knights' Station, and Carthage, and beyond Neck City and North Fork. Several new mines at Sarcoxie are already figuring prominently in the "Weekly Sales" column. Still further east, the old mining camp, Aurora, is enjoying a revival of interest in metal mining, and Lawrence county may be depended on for an increased output in 1909. In portions of the old camps at Joplin, Oronogo, Webb City, and Carterville, extensive prospecting was done with excellent results. To this must be added the new discoveries in Newton county, which promise to figure greatly in the future ore output of the district. In all of the old camps, many old mines, which had been abandoned, supposedly worked out, were reopened and worked to greater depth, with the result of finding large deposits of ore. It is therefore evident that new development has kept pace with old and worked out mining properties, and that the Southwest district will continue to hold its enviable position of premier zinc producer of the United States.

The introduction of automatic power shovels in the mines of the Southwest district is still an experiment. The first of these steam shovels was installed by the American Zinc, Lead and Smelting Company. The desire to increase the output, and the scarcity of American-born mine laborers has induced the trial of the power shovel. The substitution of the steam shovel for hand shovelers will, however, depend upon its adaptability in underground work in this section, and the possibility of increasing the output.

Another feature demanding increased attention in this section is the use of natural gas for mining purposes. The natural gas used in the Joplin district is supplied by the Kansas Natural Gas Company, and is pumped from Liberty, Kansas, through the "Southern Trunk," a 16-inch pipe, 65 miles long, supplying every town and village along the line. For mining purposes, natural gas is used in two ways—under boilers and in gas engines. The advantages claimed for natural gas over coal, are economy in operation, cleanliness, ease of operation, and the regularity of supply and heat which gives steady power to the machinery. The advantages of the gas engine over the steam engine, it is claimed, lies in its low cost of maintenance and the small amount of attention required.

Mr. Doss Brittain of Joplin, Mo., writing on the use of natural gas in the Joplin district in the Engineering and Mining Journal, says: "It is estimated that 20,000,000 cubic feet of gas are consumed daily in the district, 25 per cent. of which is used for manufacturing and domestic purposes, and the remaining 75 per cent. in the concentrating plants of lead and zinc mines. Approximately 400 companies and individual operators use natural gas. For use under boilers, it is delivered at a regular summer rate of ten cents per 1,000 cubic feet, and twelve and one-half cents per 1,000 cubic feet in winter. For gas engines the rate is 25 cents the year round. Since the introduction of gas into the district in 1905, the service has been very satisfactory, no shut-down longer than a day having occurred."

In the Southeast lead belt, mining was continued through 1908 without check, and reports from the operating companies show an increased production over 1907. The depressed market following the panic of 1907, had little or no effect on the output of the big companies in the southeast, but greatly hampered the small producers in Washington, Jefferson and Franklin counties. The five big mining companies operating in St. Francois county, show a total of 129,983 tons of lead produced in 1908, valued at $6,207,645, which constitutes 90 per cent. of the entire lead product of the district. Of the remaining 10 per cent. the Madison county product constitutes 8.6 per cent. The absence of a number of counties in the lead-producing column of 1908, which figured to greater or less extent in 1907, is not due to exhaustion of the mines, but rather, to the low market value of the ore and the inability of the small operator to profitably work his mine.

While prospect work in virgin ground was not as vigorously prosecuted in 1908 as in 1906 and 1907, the diamond drill has not been idle, and much new territory has been exploited by the big concerns, with a view of acquiring new tracts of mineral bearing land to supplant the exhausted properties. Then too, the rapidly increasing price of mineral land is a potent factor in the early acquisition of additional property. Land which but a few years ago was worth from $50 to $75 per acre is now commanding double that value, and it is safe to predict that within the next ten years $300 per acre will be considered extremely cheap.

The diamond drill is still the most favored method of prospecting, yet considerable work is being done in open ground and shallow deposits with the churn drill.

An important work on the geology of disseminated lead deposits of Southeast Missouri was compiled and published by the Missouri Bureau of Geology at Rolla, Mo., and has just recently come from the press. The work is printed in two volumes, and in the main is a geological treatise on St. Francois and Washington counties. Volume 1 contains a history of the area in relation to the ore deposits. One chapter is devoted to genesis of the ores, while other chapters cover production physiography, rock structures, barite, galena in the Potosi formation, and a description and history of the mines. The second volume contains geologic and topographic maps, showing underground workings of the mines, drawings, illustrating manner of occurrence of galena, and numerous other illustrations.

The total lead product of the Southeast district in 1908 was 144,953 tons, against 112,978 tons produced in 1907. The value of the lead product of the district was $6,647,243 in 1908, and $7.209,700 in 1907. An increase in tonnage, 31,975 tons, or 28.3 per cent. and a decrease in valuation of $562,457 or 7.8 per cent.

Madison county contributes 12,500 tons to the total lead product which was valued at $443,051. The largest amount was produced by the Mine La Motte Lead and Smelting Company, 7.619 tons of lead ore, valued at $209,764. Other counties contributing to the lead product of Southeast Missouri were Washington and Jefferson. Five counties, Camden, Miller, Morgan, Webster and Wright counties, which were in the lead-producing column in 1907 reported no output for 1908. Washington county shows an increase in production of 400 tons, or 35 per cent., and a decrease in valuation of $2,735, or 3.53 per cent.; while Jefferson county reports show a decrease in both production and valuation.

COAL.

The coal fields of the State also show a marked decrease in production in 1908. After setting a high mark for production in 1907, with a tonnage of 4,355,494, the reports for 1908 show a decrease of 954.850 tons, or a loss of 21.9 per cent. This reduction in Missouri's coal output is not entirely due to the financial depression. A large per cent. of the loss must be attributed to the exceptionally warm weather prevailing during the first three and last three months of the year. which reduced the usual winter demand. But there are other causes which contributed to this decrease. According to the official report of the United States Geological Survey, the coal mining industry of the State was adversely affected more by the increased production and consumption of petroleum and natural gas in the mid-continental field, than by the business depression.

Natural gas from the Eastern Kansas and Northern Oklahoma fields is piped to Kansas City, St. Joseph, Joplin. and many other smaller Missouri points. Practically all of Kansas City and its suburbs are supplied with natural gas from the Kansas field, for domestic purposes. Nearly all of the smaller factories use it, and a great many of the larger factories are consumers of gas, and more especially during the summer season.

But there is still another reason for a decrease in the output of the mines. Nearly all of the coal mines of the State were idle during the months of April, May and a part of June, pending the adoption of a new agreement between the Southwestern Interstate Coal Operators Association and the United Mine Workers of America. The old agreement expired on March 31, 1908, and a new contract was made May 25, 1908, to cover a period of two years, ending March 31, 1910.

The total output of the coal mines of the State for the calendar year 1908 was 3,400,644 tons. The value of all coal mined in 1908 was $5,644,330, as against $7,306,125 in 1907, a decrease of $1,661,795 in valuation. The total tonnage reported to this departments is 83,329 tons more than the total number of tons credited to Missouri by the United States Geological Survey. In the report of the Federal Government on the coal output of Missouri, the State of Kansas receives credit for a considerable tonnage which properly should have been credited to Missouri. The mines of the Home Riverside Coal Company at Leavenworth, Kansas, are entered on the Kansas side and extend under the Missouri river into Platte county, Missouri. The output of this company taken from the coal beds in Platte county in 1908 was 190,306 tons.

Macon county produced more coal in 1908 than any other county in the State. The total production of the county was 851,130 tons, or 25 per cent. of the total output of the State. The value of Macon county coal produced in 1908 was $1,217,584.

Lafayette county comes next to Macon in production, with 571,908 tons, valued at $1,034,334; and Adair county is third in rank in production with a total tonnage of 568,446, having a valuation of $834,540. Macon, Lafayette and Adair counties together, produced 1,991,484 tons of coal, or 58.56 per cent. of the total product of the State for 1908.

Mining machines were in use in seven counties, and the total amount of machine coal mined was 491,676 tons, or 14.45 per cent. of the total product. The total number of tons mined by pickwork was 2,908,968 or 85.55 per cent. of the total output. Comparing these figures with the figures of the preceding year, machine coal shows a decrease of 57,381 tons, and pickwork a decrease of 897,469 tons.

The average price received for coal which was shipped by railroad, and not sold to local consumers during 1908 was $1.66 per ton. This is a decrease of one and three-quarter cents on the selling price of 1907. The average price per ton paid to miners during 1908 for pickwork was $1.09.

The total number of men employed in the coal mines of the State during 1908 was 9,391, which number was only 42 less than the number employed in 1907.

IRON.

Iron ore was produced and reported to this department from eight counties. The total output for 1908 was 106,687 tons valued at $229,617, a decrease in tonnage compared with the output for 1907 of 676 tons, and an increase in value of $9,441.

The iron ore product for 1908 was distributed as follows: Butler county 2,661 tons, value $5,987; Crawford, 36,864 tons, value $92,160; Howell, 6,390 tons, value $9,585; Phelps, 7,655 tons, value $15,300; St. Francois, 8,300 tons, value $20,000; Stoddard, 485 tons, value $776; Wayne, 13,728 tons, value $25,128; reported by small operators and not classified by counties, 21,604 tons, value $44,931.

Judging from the amount of new prospect and development work now being carried on in Wayne, Butler, Crawford and Iron counties, the output for 1909 will be a record breaker in regard to tonnage.

In Wayne county noteworthy improvements are being made by the Williamsville Iron Company. This company has recently put in a new washer which the company calculates will handle 500 tons per day.

Other companies carrying on new development work are the Iron Mountain, Iron Mine, Wayne County Iron and Lumber Co., and the St. Francois County Iron Company.

COPPER, COBALT AND NICKEL.

Copper mining in Missouri is by no means a late industry, for it is known that copper was found as early as 1837, and copper has figured in the statistics covering the mineral products of the State for a number of years. But, not until very recently has the copper mining industry been given special or considerable attention. This was due in part to the difficulty experienced in separating the copper from other ores, which difficulty seems now to have been overcome.

While small quantities of copper ore were doubtless produced in a number of counties of which this department received no report, the known product for 1908 was produced by one company, The North American Lead Company at Fredericktown in Madison county. This company produced 1,100,000 pounds of copper valued at $145,000, which is more than double the amount, in value, produced by this same company in 1907.

Not only was copper produced by the North American Lead Company, but nickel and cobalt, which heretofore scarcely figured in the mineral products of the State. The cobalt and nickel adds $110,000 to the value of our products for 1908. Of this amount, the company's report shows $75,000 worth of cobalt, and $35,000 worth of nickel. The report of the company also states that new smelting and refining plants for the production of copper, nickel and cobalt in their refined form, ready for the consumers. begun in 1907, were completed in 1908; and that all the earnings of the company during 1908 were invested in new improvements.

BARYTES OR TIFF.

The reports on the production of barytes in Missouri in 1908 shows a big slump in tonnage and value. The total production in 1908 was 15,653 tons, valued at $61,875. Compared with the production of 1907, the Missouri product shows a falling off of 44,617 tons, the total for 1908 being only about 25 per cent. of the output of 1907. Despite the big reduction in the output, Missouri again took the lead in the production of barytes in 1908. The total amount mined in the United States in 1908 was 34,615 short tons, valued at $110,662, Missouri producing 48.1 per cent. of the total product of the country.

The cause for the great decrease in production is attributed to overproduction, the year 1907 being a record breaker in the production of barytes. The Government report says:

"After the panic in the latter part of 1907, trade in barytes products came practically to a standstill, and mills that operated at all during 1908 had nearly sufficient material on hand to last throughout the year, consequently the production of the mines was greatly curtailed. The demand for barytes in the paint and chemical industries was comparatively small, and mills which had accumulated large stocks of raw material at the close of 1907, had to purchase little additional material during 1908, and what was purchased was bought at prices that were not at all attractive to miners."

The Missouri product for 1908 was produced by three counties, Cole, Franklin and Washington, the latter supplying 84.76 per cent. of the total product. Washington county reports 13,269 tons mined in 1908 as against 43,116 tons mined in 1907, a loss of 29,847 tons. Cole county reports 2,024 tons, a decrease of 2,638 tons in the output of 1908. Franklin produced only 360 tons, whereas the year before, the county was credited with 1,000 tons.

Seven counties, Camden, Jefferson, Miller, Moniteau, Morgan and St. Francois producing barytes in 1907, report no output for 1908.

The average price received for barytes in the United States for the year was $3.20 a ton, and the average price for the Missouri product was $3.95, a reduction of 89 cents a ton on the average price received in 1907.

CLAY.

The reports of operators of clay mines show an increase in the output of the mines during 1908. This department received reports from fifteen companies, showing 299,018 tons of clay mined, valued at $284,386. In addition thereto, the Bureau of Labor Statistics received reports of clay mined during 1908, not included in the above figures, which bring the total tonnage up to 486,291 and add to the value $193,610, making the total value of all clay mined $477,996.

The amount of clay mined in 1907 was 454,487 tons, an increase of 31,804 tons for 1908. The average price received per ton during 1908 was 98c, a decrease of 3 cents under the price of 1907.

The Atlas Portland Cement Co. reports 100,000 tons of silica shale produced in 1908, or 32,141 tons less than the amount produced in 1907.

The table below gives the amount and value of the clay mined during 1908, compared with the output of 1907:

	1908		1907	
	Tons.	Value.	Tons.	Value.
Blackmer and Post Pipe Co	18,010	$10,806	31,859	$31,859
Ellwanger, Thos. T	8,900	6,675	10,856	9,770
Evans and Howard	68,000	68,000	89,710	89,710
Fulton Fire Brick and Clay Co	10,000	12,500	14,300	15,301
Goetz Bros. Fire Clay Co	12,000	10,800	17,850	14,815
Grandview Fire Clay Mines	16,000	17,760	60,000	75,000
Gulken, Theo	20,000	15,000	25,000	20,000
Highland Fire Clay Co	19,400	20,000	12,000	12,840
Hydraulic Pressed Brick Co	23,294	34,244	88,000	94,160
Krummel & Buckner Fire Clay Co	18,300	14,823	24,500	18,987
Mitchel Clay Manufacturing Co	21,334	16,000	11,620	11,620
Parker-Russell M. & M. Co	17,373	17,373	25,392	25,392
Roberts, H. & Son	9,500	8,075	12,500	12,500
St. Louis V. & F. Brick Co	21,907	16,430	30,900	27,810
Versailles Fire Brick and Clay Co	15,000	15,900		
Totals	299,018	$284,386	454,487	$459,764
Reported to Bureau of Labor Statistics and not included in above	187,273	193,610		
Grand totals	486,291	$477,996	454,487	$459,764

MINE ACCIDENTS.

The record of accidents in the mines of the State for 1908, does not make the very best showing. Comparing the figures of 1908 with those of 1907, we find an increase of forty-nine in the total number of accidents. Out of a total of 147 accidents, 56 were fatal, and 91 were non-fatal.

The largest number of accidents occurred in the Western Lead and Zinc District, 85 accidents or 57.8 per cent. of the total being recorded against the district, an increase of 34 non-fatals and a decrease of two fatals.

In the coal mines of the State there occurred 47 accidents or 32 per cent. of the total, ten of which were fatal, and 37 were non-fatal. This is an increase of two fatals and 14 non-fatals, over the record of the previous year.

The Eastern Lead and Zinc District reported 15 accidents, or 10.2 per cent. of the total, an increase of five fatals, and a decrease of four non-fatals.

In the following table the number of accidents occurring in 1908 are compared with the number of accidents reported in 1907.

Districts.	Fatal.		Non-fatal.		Total.	
	1907	1908	1907	1908	1907	1908
Eastern Lead and Zinc Mines	8	13	6	2	14	15
Western Lead and Zinc Mines	35	33	18	52	53	85
Coal Mines of the State	8	10	23	37	31	47
Total number of accidents	51	56	47	91	98	147

Considering the nature of the various accidents reported, the greatest number are attributable to fall of roof. Out of the total 147 accidents, 58 or 39.45 per cent. were due to this cause. Of this number, 22 were fatal, and 36 non-fatal. Other accidents contributing large percentages were caused by explosion of powder, explosion of shot, and falling of tub with men in same. The various causes of fatal and non-fatal accidents are given below:

Cause of accident.	Fatal.	Non-Fatal.	Total.
Caught in effort to fire too many shots	1	....	1
Caught at shaft bottom by cage	1	1	2
Drilled into an old shot	4	1	5
Explosion of boiler	1	....	1
Explosion of gas	1	....	1
Explosion of powder	4	3	7
Explosion of shot	4	5	9
Fall of coal	....	2	2
Falling into crusher jaws	....	1	1
Falling of material into shaft	3	3	6
Falling from pillar	....	1	1
Falling of rock	10	9	19
Falling in room	....	1	1
Falling of roof	12	27	39
Falling on rock	....	1	1
Falling into shaft	3	3	6
Falling into sump	....	3	3
Falling of timber	....	2	2
Falling of tub with men	....	8	8

Cause of accident.	Fatal.	Non-Fatal.	Total.
Falling from tub	2	2	4
Falling of tub on men	1	2	3
Foul air	3	1	4
Hurt by cage		2	2
Hurt by car	1	7	8
Hurt by tub		1	1
Hurt at mill		1	1
Leaned too far from cage	1		1
Returned too soon on shot	1		1
Returned on squib shot		1	1
Premature explosion	1		1
Fall of boulder into shaft	1	1	2
Unknown cause	1	1	2
Fall of rock from car		1	1
Totals	56	91	147

Of the 56 fatal accidents reported in 1908, thirty-three or 58.93 per cent. occurred in the Western Lead and Zinc District; thirteen or 23.21 per cent. in the Eastern Lead and Zinc District, and ten or 17.86 per cent. in the coal mines of the State.

Out of the total of 47 accidents occurring in the coal mines during 1908, the greatest number were due to fall of roof, twenty-two or 47 per cent. being the direct result of this cause, nine of which resulted fatally. For each fatal accident in the coal mines of the State during 1908, there were 340,064 tons of coal produced.

The table below shows the number of accidents occurring in each of the coal producing counties, and the percentage of the total number of accidents in coal mines:

County.	Fatal.	Non-Fatal.	Total.	Per cent.
Macon	5	9	14	29.80
Linn		12	12	25.50
Ray		6	6	12.80
Lafayette	1	4	5	10.62
Adair	1	3	4	8.50
Bates	1	1	2	4.25
Randolph	2		2	4.25
Vernon		1	1	2.14
Callaway		1	1	2.14
Totals	10	37	47	100.00

RESCUE STATIONS.

The following from the January number of the Engineering and Mining Journal of 1909, relating to mine accidents and the establishment of rescue stations by the United States Geological Survey will be of interest to miners generally:

"Under the terms of its appropriation of $150,000 for the investigation of mine disasters, the Geological Survey has determined to establish rescue stations at or near the centers of mine accidents for the purpose of teaching miners how to use the most approved apparatus for mine rescue work. Government engineers will be assigned to the stations ready to go to the scene of any disaster, equipped with oxygen helmets. The stations will be supplied with air-tight rooms where gas can be generated, and coal mining companies will be invited to send selected men to the station for a sojourn. The men will then be trained in the use of the oxygen helmets. The Government does not plan to carry on general rescue work, but rather to assist mine owners in developing trained rescue crews at the mine, the rescue stations being erected in co-operation with the mine owners and State Geological Surveys.

"The location of stations so far as determined on is as follows: At Urbana, Ill., in connection with the University of Illinois, for a district including, Illinois, Indiana, Michigan, Iowa, Northern Missouri and Western Kentucky; at Raton, New Mexico, for a district including New Mexico, Colorado, Wyoming and Montana, with a second station possibly at Salt Lake City, Utah; at or near South McAlester, Oklahoma, for a district including Oklahoma, Arkansas and Southwestern Missouri; at an undetermined point (perhaps Knoxville, Tenn., Birmingham, Ala., or Lexington, Ky.), for a district including Alabama, Tennessee, Virginia, Eastern Kentucky, Georgia and Southern West Virginia. George S. Rice, mining engineer, will be given general charge of the mining inquiries at these stations, and J. W. Paul, formerly State Mine Inspector of West Virginia will be assigned supervision of all the rest of the work.

A second function of the stations will be that of acting as headquarters for the engineers engaged in the study of the waste of coal in mining. Safety lamps of all designs will also be tested at these stations in order to ascertain their general safety and efficiency.

Officers of the survey express the opinion that much progress in averting the evil results of mine disasters can be made through the use of oxygen helmets which have recently been demonstrated in one or two important accidents, with what are considered good results."

MINERAL PRODUCTION OF MISSOURI FOR THE YEAR 1908—BY COUNTIES.

Counties.	Zinc.		Lead.		Coal.		Iron.		Barytes.		Copper.	Cobalt.	Nickel.	Total value all minerals.
	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.	Value.	Value.	Value.	
Adair					568,446	$834,540								$834,540
Audrain					31,391	56,929								56,929
Barton					103,765	145,999								145,999
Bates					136,531	219,635								219,635
Boone					26,842	51,744								51,744
Butler							2,661	$5,987						5,987
Caldwell					10,800	25,920								25,920
Callaway					50,719	104,195								104,195
Carroll					1,581	4,348								4,348
Cass					5,340	10,680								10,680
Cedar					165	408								408
Chariton					879	2,571								2,571
Clay					37,786	81,239								81,239
Cole			5	$250	500	1,000			2,021	$7,084				8,334
Crawford							36,864	92,160						92,160
Dade	40	$800			4,654	8,104								8,904
Franklin			85	4,275			9,000	15,750	360	1,890				21,915
Greene	1,751	71,122	187	10,388										81,510
Grundy					10,822	28,137								28,137
Henry					216,152	366,508								366,508
Howard					7,438	13,699								13,699
Howell							6,300	9,585						9,585
Jasper	166,428	5,603,455	32,654	1,783,131										7,386,586
Jefferson	1,434	16,496	822	17,622										34,118
Johnson					7,888	16,468								16,468
Lafayette					571,908	1,034,334								1,034,334
Lawrence	6,715	183,895	67	3,126										187,021
Lewis					123	292								292
Linn					104,240	230,272								230,272
Livingston					1,010	2,020								2,020
Macon					851,130	1,217,584								1,217,584
Madison			12,500	443,051							$145,000	$75,000	$35,000	698,051
Moniteau	120	3,600	15	750	3,100	8,750								13,100
Monroe					800	2,200								2,200
Montgomery					1,382	3,455								3,455
Morgan					1,683	3,787								3,787
Newton	18,966	454,551	2,375	121,010										575,561
Phelps							7,655	15,300						15,300
Platte					190,306	380,612								380,612
Putnam					54,505	92,183								92,183
Ralls					14,415	26,585								26,585
Randolph					31,266	47,078								47,078

MINERAL PRODUCTION OF MISSOURI FOR THE YEAR 1908, BY COUNTIES—Continued.

Counties.	Zinc.		Lead.		Coal.		Iron.		Barytes.		Copper.	Cobalt.	Nickel.	Total value all minerals.
	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.	Value.	Value.	Value.	
Ray					294,230	$531,931								$531,931
St. Francois			129,983	$6,207,645			8,300	$20,000						6,227,645
St. Clair					812	1,915								1,915
Saline					150	300								300
Schuyler					2,425	3,367								3,367
Stoddard							485	776						776
Sullivan					3,263	6,058								6,058
Vernon					52,197	79,483								79,483
Washington			1,537	74,665					13,269	$52,901				127,566
Wayne	2,040	$40,800					13,728	25,128						65,928
Totals	197,494	$6,374,719	180,230	$8,665,913	3,400,644	$5,644,330	85,083	$184,686	15,653	$61,875	$145,000	$75,000	$35,000	$21,186,523
*Iron							21,604	44,931						44,931
							106,687	$229,617						

OTHER MINERAL REPORTED BY THE STATE GEOLOGIST.

Mineral water, 682,821 gallons; value	$86,043	
Portland cement, 2,859,504 barrels; value	2,571,236	
Lime, 167,060 tons; value	701,321	
Pottery products; total value	68,908	
Brick and tile; total value	5,529,553	
Stone	1,982,109	
Total	$10,939,170	$10,939,170
†Clay reported to Labor Department, 187,273 tons; value		193,610
Clay reported to Mining Department, 299,018 tons; value		284,386
Grand total		$32,648,620

*Reported by State Geologist and not included in report by counties. †Exclusive of reports made to Mining Department.

STATISTICAL.

COAL.

ADAIR COUNTY.

Name of company or person operating.	Capitalization	Total tons of coal mined in 1908	Tons of coal mined by		Total value of coal, 1908	Prices received at the mines	Prices paid per ton for mining coal—pick work		Coal, how disposed of.				No. of machines used	Machine employes—prices paid.		
			Pick work	Machines			Winter	Summer	Shipped by rail	Hauled away in wagons	Consumed by miners	Used at the mines		Miners, per ton	Machine runners, per day	Machine helpers, per day
Big Creek Coal Co	$3,500	1,042	1,042		$1,954	$1.87	$ .72	$ .72		834		208				
Consolidated Stahl Coal Co.	30,000	14,578		14,578	25,945	1.78	.58	.58	14,265	76	58	179	1	$ .58	$2.56	$2.75
Great Northern F. Co. No. 23	1,000,000	27,956	27,956		41,934	1.50	.72	.72	26,956			1,000				
Great Northern F. Co. No. 1		3,991	3,991		5,986	1.50	.72	.72	3,191			800				
Great Northern F. Co. No. 7		42,548	42,548		63,822	1.50	.72	.72	40,748		200	1,600				
Harl Coal Co.		200	200		350	1.75	.72	.72			200					
Hazel Creek Coal Co.	2,000	560	560		980	1.75	1.00			560						
Ideal Block Coal Co.		5,416	5,416		10,141	1.87	.95		5,346	47		23				
Ivie, J. M. & Sons.	15,000	5,555	5,555		11,110	2.00	.72	.72		5,355		200				
Kansas City Midland C. Co.	50,000	102,800	102,800		141,864	1.38	.72	.72	100,000	900	900	1,000				
Lee, John Mine		1,000	1,000		1,750	1.75	.72			1,000						
Manuftr's C. & C. Co. No. 1	2,000,000	52,510	52,510		75,877	1.44	.72	.72	51,315	600		595				
Manuftr's C. & C. Co. No. 4		54,586	54,586		78,877	1.44	.72	.72	53,966			620				
Manftr's C. & C. Co. No. 50		53,107	53,107		76,740	1.44	.72	.72	51,864	200		1,043				
Rombauer Coal Co. No. 2	150,000	124,471	124,471		182,599	1.46	.77	.77	122,336	905		1,230				
Rombauer Coal Co. No. 3		78,126	78,126		114,611	1.46	.72	.72	76,957	190		979				
Totals		568,446	553,868	14,578	$834,540				546,944	10,667	1,358	9,477				

AUDRAIN COUNTY.

Audrain Coal Co.	$10,000	17,623	17,623		$30,840	$1.75	$1.02	$1.02	14,831	2,341	416	35				
Bevan Coal Co.	7,000	1,220	1,220		2,745	2.25	1.37	1.37		1,220						
Davis & Watson	25,000	2,088	2,088		3,758	1.80	1.02		1,682	114	88	204				
Davidson, Henry	700	480	480		1,080	2.25	1.37			480						
Edwards, J. A.		1,150		1,150	2,587	2.25				1,000		150	1	$ .50	$2.50	$3.00
Hammett, Edw.		84	84		189	2.25	1.37	1.25		84						
Mississippi Glass Co.	100,000	5,736	5,736		10,038	1.75	1.23	1.28		70		5,666				
Martinsburg Coal & M'g Co.		1,800	1,800		2,970	1.65			1,200	438	100	62				
Standard Coal Co.	6,000	1,210	1,210		2,722	2.25	1.15	1.15	200	900	100	10				
Totals		31,391	30,241	1,150	$56,929				17,913	6,647	704	6,127				

BARTON COUNTY.

Name of company or person operating.	Capitalization	Total tons of coal mined in 1908	Tons of coal mined by		Total value of coal, 1908	Prices received at the mines	Prices paid per ton for mining coal—pick work		Coal, how disposed of.				No. of machines used	Machine employes—prices paid.		
			Pick work	Machines			Winter	Summer	Shipped by rail	Hauled away in wagons	Consumed by miners	Used at the mines		Miners, per ton	Machine runners, per day	Machine helpers, per day
Betz Bros.	$700	480	480		$840	$1.75	$.80			460	20					
Bogartz, Wm.		500	500		1,000	2.00			450			50				
Breivogel & Sanders		2,000	2,000		4,000	2.00	1.00	$1.00		1,980	14	6				
Brooks Bros.		801	801		1,121	1.40			695	106						
Cackley, J. T.	500	403	403		604	1.50	1.00			400	3					
Clark Bros.	645	350	350		875	2.50	1.00			350						
Correlli Coal Co.		235	235		399	1.70	.72		200		15	20				
Cross, J. M.	2,000	103	103		159	1.54				103						
Creekmore, W. T.	2,000	800	800		1,400	1.75	.72		200	600						
Davis Coal Co.	500	1,640	1,640		2,050	1.25	.72	.72	1,600		40					
Givet, W. H.		320	320		600	1.87				320						
Gray, Geo.		1,500	1,500		1,800	1.20			1,500							
Hembree, J. T.		8,345	8,345		11,099	1.33	.72	.72	7,645			700				
Imperial Coal Co.	10,000	6,922	6,922		9,518	1.37	.72	.72	6,504		228	190				
Lawrence, F.		900	900		1,575	1.75	1.50			900						
Lasley, W. B.		6,000	6,000		7,800	1.30				6,000						
Lavery Coal Co.	1,000	6,000	6,000		9,000	1.50			6,000							
Mulkins, T. E.		294	294		441	1.50	.72	.72		284		10				
Orahud, A. J.		200	200		500	2.50				200						
Orahud, Wm.		40	40		90	2.25				40						
Peck & Brummett		150	150		375	2.50				150						
Perry, A. J.		100	100		200	2.50	1.50			100						
Pullen & Sons Coal Co.	6,000	3,174	3,174		4,285	1.35	.72	.72	3,033		32	109				
Rector, G. W.		631	631		984	1.56	1.13			631						
Rector, W. B.		160	160		280	1.75				160						
Stephenson, J. J. Coal Co.	1,000	2,629	2,629		4,475	1.70			2,629							
Stone, C. T.		600	600		900	1.50	1.00	1.00		600						
Wear Coal Co.	150,000	43,385	43,385		58,397	1.34			40,932		653	1,800				
Western C & M'g Co. No. 9	1,000,000	9,781	9,781		12,403	1.26	.72	.72	9,781							
Western C. & M. Co. No. 17		2,619	2,619		3,321	1.26	.72	.72	2,619							
Totals		101,062	101,062		$140,491				83,788	13,384	1,005	2,885				
Miscellaneous reports		2,703			5,508											
Grand totals		103,765			$145,999											

BATES COUNTY.

Name of company or person operating.	Capitalization.	Total tons of coal mined in 1908.	Tons of coal mined by		Total value of coal, 1908.	Prices received at the mines.	Prices paid per ton for mining coal—pick work		Coal, how disposed of				No. of machines used	Machine employes—prices paid.		
			Pick work.	Machines.			Winter.	Summer.	Shipped by rail	Hauled away in wagons.	Consumed by miners.	Used at the mines.		Miners, per ton.	Machine runners, per day	Machine helpers, per day.
Ayer, U.		1,200	1,200		$1,660	$1.30			800		400					
Atlas Coal Co.	$20,000	36,037	36,037		52,254	1.45			34,072		525	1,440				
Ackerman, J. T.		410	410		717	1.75				400	10					
Arbogast, D. H.		670	670		1,005	1.50			620		50					
Carr Coal Co.	2,200	12,950	12,950		19,425	1.50			12,000	500	150	300				
Clark-Heckadon C. M'g Co.	13,000	10,064	10,064		16,354	1.62			10,064							
Cook & Rankin.		480	480		552	1.15			480							
Cooper, Wilson.	12,000	400	400		600	1.50			120	280						
Decker, H. W.		284	284		497	1.75				284						
Dunkerly Coal Co.	8,000	10,850	10,850		20,615	1.90			10,800		50					
Duzan, J M.	1,000	1,125	1,125		1,912	1.70			784	341						
Engels, J. T.	5,000	3,000	3,000		5,250	1.75			2,000	1,000						
Fleming Coal Co.	2,000	8,000	8,000		16,000	2.00			8,000							
Grooms, C. P.		400	400		800	2.00				400						
Harris, J. A.		322	322		467	1.45				322						
Henley, R. J.		125	125		219	1.75				125						
Heatherly, J & Son.	500	867	867		1,517	1.75			737	70	60					
Henderson Bros.		125	125		250	2.00				125						
Hines, E. T.	900	4,000	4,000		6,600	1.65			2,500	1,490		10				
Holland Coal Co.	2,000	12,392	12,392		22,925	1.85			12,075	60	80	177				
Houghton, C. E.		1,131	1,131		1,583	1.40			984	22		125				
Hughes Coal Co.	1,000	400	400		800	2.00			250	150						
Jones Coal Co.	2,100	12,250	12,250		18,375	1.50			12,200		25	25				
Johnson, King.	1,500	850	850		1,232	1.45				800		50				
McClendon, Harry.		463	463		926	2.00			400	63						
McCullough, Williams & Stover.		160	160		240	1.50				140	20					
McComb Estate, David.		1,800	1,800		2,700	1.50			1,000	800						
Pearson Bros.		1,500	1,500		2,625	1.75				1,500						
Peeler, D. D.		800	800		1,600	2.00				800						
Ritchie, H. C.	10,000	2,500	2,500		4,375	1.75			1,000	1,500						
Roberts, Jos.		700	700		1,050	1.50				700						
Shelton & Metzler.		655	655		1,146	1.75			640			15				
Shelton & Williams.		318	318		556	1.75			218	100						
Smalley, J.M.		120	120		210	1.75				120						
Standard Coal Co.	1,200	1,865	1,865		2,704	1.45			1,634	231						
Sprague Mine.		1,123	1,123		1,796	1.60			643	480						
Scott, Thos.	250	280	280		490	1.75			80	200						

BATES COUNTY—Continued.

Name of company or person operating.	Capitalization	Total tons of coal mined in 1908	Tons of coal mined by		Total value of coal, 1908	Prices received at the mines	Prices paid per ton for mining coal—pick work		Coal, how disposed of.				No. of machines used	Machine employes—prices paid.		
			Pick work	Machines			Winter	Summer	Shipped by rail	Hauled away in wagons	Consumed by miners	Used at the mines		Miners, per ton	Machine runners, per day	Machine helpers, per day
Treasurer & Littlefield		500	500		$875	$1.75				500						
Tatley, J. V.	$5,000	2,000	2,000		3,250	1.62			2,000							
Tarver, E. R.		3,415	3,415		3,483	1.02			3,400		15					
Totals		136,531	136,531		$219,635				119,501	13,503	1,385	2,142				

BOONE COUNTY.

Name of company or person operating.	Capitalization	Total tons of coal mined in 1908	Pick work	Machines	Total value of coal, 1908	Prices received at the mines	Winter	Summer	Shipped by rail	Hauled away in wagons	Consumed by miners	Used at the mines	No. of machines used	Miners, per ton	Machine runners, per day	Machine helpers, per day
Davis & Watson Coal Co.	$25,000	7,641	7,641		$15,282	$2.00	$1.00	$1.00		7,641						
Gray, J. T.	5,000	880	880		1,760	2.00	1.00	1.00		875	2	3				
McGee & Davis Bros.		704	704		1,126	1.60	1.00			704						
Prather, W. R.		9,000	9,000		18,000	2.00	1.01	1.00		8,700	200	100				
Shock, R. L.		800	800		1,400	1.75	1.12	1.12		800						
Sutton, W. C.		1,100	1,100		2,200	2.00	1.00	1.00		1,100						
White, M. R.	1,000	1,437	1,437		2,156	1.50	1.00	1.00		1,435	2					
White, J. H.	2,500	800	800		1,200	1.50	1.00			800						
Totals		22,362	22,362		$43,124					22,055	204	103				
Miscellaneous reports		4,480			8,620											
Grand totals		26,842			$51,744											

CALDWELL COUNTY.

Name of company or person operating.	Capitalization	Total tons of coal mined in 1908	Pick work	Machines	Total value of coal, 1908	Prices received at the mines	Winter	Summer	Shipped by rail	Hauled away in wagons	Consumed by miners	Used at the mines	No. of machines used	Miners, per ton	Machine runners, per day	Machine helpers, per day
Caldwell Coal Co.	$50,000	10,800	10,800		$25,920	$2.40	$1.25	$1.25	8,800	1,500		500				

CASS COUNTY.

Name of company or person operating.	Capitalization	Total tons of coal mined in 1908	Pick work	Machines	Total value of coal, 1908	Prices received at the mines	Winter	Summer	Shipped by rail	Hauled away in wagons	Consumed by miners	Used at the mines	No. of machines used	Miners, per ton	Machine runners, per day	Machine helpers, per day
Cherokee C. & M'g Co.	$10,000	5,340	5,340		$10,680	$2.00	$ .97	$ .97	5,000		100	240				

CALLAWAY COUNTY.

Name of company or person operating.	Capitalization.	Total tons of coal mined in 1908.	Tons of coal mined by		Total value of coal, 1908.	Prices received at the mines.	Prices paid per ton for mining coal—pick work		Coal, how disposed of.				No. of machines used	Machine employes—prices paid.		
			Pick work.	Machines.			Winter.	Summer.	Shipped by rail.	Hauled away in wagons.	Consumed by miners.	Used at the mines.		Miners, per ton.	Machine runners, per day.	Machine helpers, per day.
Bell, Eli		974	974		$1,948	$2.00	$1.25	$1.25		858	116					
Diehl, Henry		1,637	1,637		3,274	2.00	1.25	1.25		1,637						
Fulton Coal Co	$2,400	7,400	7,400		18,500	2.50	1.25	1.25		5,400	800	1,200				
Harris, Fred	500	2,560	2,560		6,400	2.50	1.25	1.25		2,560						
Morsinkoff, Jno. A		300	300		675	2.25	1.25	1.25			300					
McCown, Robt		140	140		245	1.75					140					
Nicholson, C. M		5,280	5,280		9,240	1.75	1.00	1.00		5,280						
Reed, J. F		1,664	1,664		4,260	2.50	1.25	1.25			1,664					
Skelley, E		7,500	7,500		13,125	1.75	1.00				7,500					
Smith, David	5,000	2,400	2,400		4,800	2.00	1.25			2,400						
Simmonds, J. W	1,500	20,864	20,864		41,728	2.00	1.25	1.25		20,849		15				
Totals		50,719	50,719		$104,195					38,984	10,520	1,215				
CARROLL COUNTY.																
Brown, Chas. & Co		600	600		$1,650	$2.75	$1.75	$1.75		600						
Cowan, R. M	$6,000	80	80		220	2.75	1.75			75	5					
Keynon, J. A		461	461		1,268	2.75	1.75			461						
Odell, Jas		440	440		1,210	2.75	1.75			440						
Totals		1,581	1,581		$4,348					1,576	5					
CHARITON COUNTY.																
Frazier, S. W. & Son	$125	450	450		$1,350	$3.00				450						
Kahler, W. J		12	12		24	2.00				12						
Rothville C. & M'g Co	200	177	177		487	2.75				177						
Strickland, J. C		40	40		110	2.75				40						
Wampler Coal Co		200	200		600	3.00				175	15	10				
Totals		879	879		$2,571					854	15	10				

CEDAR COUNTY.

Name of company or person operating.	Capitalization	Total tons of coal mined in 1908	Tons of coal mined by		Total value of coal, 1908	Prices received at the mines	Prices paid per ton for mining coal—pick work		Coal, how disposed of.				No. of machines used	Machine employes—prices paid.		
			Pick work	Machines			Winter	Summer	Shipped by rail	Hauled away in wagons	Consumed by miners	Used at the mines		Miners, per ton	Machine runners, per day	Machine helpers, per day.
Taylor, R. J.	$400	165	165		$408	$2.47				165						
CLAY COUNTY.																
Missouri City Coal Co.	$10,000	37,786	37,786		$81,239	$2.15	$1.11	$1.11	34,466	2,480		840				
COLE COUNTY.																
Bandelier, S. & A		500	500		$1,000	$2.00	$1.75		400	50	50					
DADE COUNTY.																
Davis Bros.		120	120		$180	$1.50	$1.00			120						
Duncan, C. C.		40	40		60	1.50		$1.00		40						
Hickman, O.	$8,000	1,014	1,014		1,774	1.75		.87	560	440	14					
McCluey, L. V.		600	600		1,050	1.75	1.12	1.12		600						
Sporman, Edw	500	1,280	1,280		2,240	1.75	1.00	1.00		1,280						
Stout, W. A.		1,600	1,600		2,800	1.75	1.00	1.00	160	1,400	34	6				
Totals		4,654	4,654		$8,104				720	3,880	48	6				
GRUNDY COUNTY.																
Trenton Mining Co.	$30,000	10,822	10,822		$28,137	$2.60	$1.35	$1.35		10,822						

HENRY COUNTY.

Name of company or person operating.	Capitalization	Total tons of coal mined in 1908	Tons of coal mined by		Total value of coal, 1908	Prices received at the mines	Prices paid per ton for mining coal—pick work		Coal, how disposed of.				No. of machines used	Machine employes—prices paid.		
			Pick work	Machines			Winter	Summer	Shipped by rail	Hauled away in wagons	Consumed by miners	Used at the mines		Miners, per ton	Machine runners, per day	Machine helpers, per day
Anaconda Coal Co.	$1,600	587	587		$1,426	$2.43	$1.11	$1.11		456	131					
Barnhart, E. A.	2,000	2,500		2,500	7,500	3.00				2,500			2	$1.50	$2.00	$1.00
Bowen Coal Co.	10,000	162,069	162,069		251,206	1.55	.67	.67	160,069	1,000	500	500				
Church Coal Co.		2,700	2,700		5,400	2.00	.67	.67	2,500	100	100					
Brush Coal Co.	2,000	7,040	7,040		15,840	2.25	1.11	1.11	6,600			440				
Dickey Clay Mfg. Co. No. 6		6,943	6,943		13,886	2.00	.97	.97	6,793			150				
Dickey Clay Mfg. Co. No. 7		5,920	5,920		11,840	2.00	.97	.97		5,760		160				
England, Jas.	1,000	3,816	3,816		7,632	2.00	1.11	1.11	600	3,126		90				
Hughes, W E.		1,983	1,983		3,966	2.00	.87			1,983						
Hurst, Jno., Coal Co.	4,000	4,322	4,322		9,076	2.10	1.11	1.11	2,228	1,999		95				
Lane, E. M.		3,354	3,354		7,546	2.25	1.10	.87	2,337	1,017						
Lewis Coal Co		8,000		8,000	16,000	2.00			8,000				2			
Parks, A. F.		3,500	3,500		7,000	2.00	80	.80	3,500							
Pharris, Thos.		2,000	2,000		5,000	2.50	1.50	1.50		2,000						
Rusk, Wm.		1,418	1,418		3,190	2.25	1.12	1.00	1,418							
Totals		216,152	205,652	10,500	$366,508				194,045	19,941	731	1,435	4			

HOWARD COUNTY.

Name of company or person operating.	Capitalization	Total tons of coal mined in 1908	Pick work	Machines	Total value of coal, 1908	Prices received at the mines	Winter	Summer	Shipped by rail	Hauled away in wagons	Consumed by miners	Used at the mines	No. of machines used	Miners, per ton	Machine runners, per day	Machine helpers, per day
Collins, Wm.		15	15		$55	$2.50	$1.50	$1.50		15						
Fisher, John D.		720	720		1,800	2.50	2.00	2.00		715	5					
Gilvan, Jas.		40	40		60	1.50					40					
Jackson, R. S. (Rohr, O. B)		350	350		927	2.65	1.75	1.50		322	22	6				
Pitney, Alex		150	150		225	1.50	1.01			150						
Pitney, O. S.		614	614		921	1.50	1.01	.75		614						
Russell C. & M'g Co		5,549	5,549		9,711	1.75	1.01	1.01	5,519	30						
Totals		7,438	7,438		$13,699				5,519	1,846	67	6				

JOHNSON COUNTY.

Name of company or person operating.	Capitalization	Total tons of coal mined in 1908	Tons of coal mined by		Total value of coal, 1908	Prices received at the mines	Prices paid per ton for mining coal—pick work		Coal, how disposed of.				No. of machines used	Machine employes—prices paid.		
			Pick work	Machines			Winter	Summer	Shipped by rail	Hauled away in wagons	Consumed by miners	Used at the mines		Miners, per ton	Machine runners, per day	Machine helpers, per day
Amer. Fuel Devel. Co.	$300,000	2,010	900	1,110	$3,618	$1.80	$ .45	$ .45	1,110	800	100		4	$.45		
Burns, M. F		600	600		1,500	2.50				600						
Bullock, P. H		800	800		1,600	2.00	1.50	1.50		800						
Bullock, D. A	1,500	400	400		700	1.75	1.25	1.25		400						
Greathouse, T. L		480	480		720	1.50	1.25	1.25		480						
Hammond, W. H		320	320		560	1.75	1.25	1.25		320						
Jacobs, W. D	225	350	350		1,050	3.00	2.00			350						
Meily, M. B		640	640		1,760	2.75	1.75	1.75		640						
Miller, Frank		895	895		1,566	1.75	1.25	1.25		885	10					
McGrath, John		360	360		940	2.50				360						
Sutherland Coal Co	10,000	513	513		1,154	2.25	1.75		78	315		120				
Werling, M		520	520		1,300	2.50	1.75	1.75		520						
Totals		7,888	6,778	1,110	$16,468				1,188	6,470	110	120				

LAFAYETTE COUNTY.

Name of company or person operating.	Capitalization	Total tons of coal mined in 1908	Pick work	Machines	Total value of coal, 1908	Prices received at the mines	Winter	Summer	Shipped by rail	Hauled away in wagons	Consumed by miners	Used at the mines	No. of machines used	Miners, per ton	Machine runners, per day	Machine helpers, per day
Aull, Edw. Coal Co	$25,000	14,759	14,759		$27,452	$1.86	$1.20	$1.20	14,085		303	371				
Bell & Greer	12,900	6,880	6,880		18,369	2.67	1.37	1.37		6,850		30				
Blacker, Wm		1,305	1,305		3,262	2.50	1.25	1.25		1,280	20	5				
Boedecker Coal Co		692	692		1,730	2.50	1.25	1.25		680	12					
Bonanza Coal Co		7,500	7,500		16,875	2.25	1.17		7,200	300						
Canterbury & Grffith	1,000	4,106	4,106		8,376	2.04	1.25	1.12		4,106						
Clay, Tom		1,400	1,400		3,500	2.50	1.25	1.25	1,400							
Corder Coal Co	2,800	1,400	1,400		3,150	2.25			1,400							
Diamond Coal Co	10,000	33,868	33,868		63,333	1.87	1.11	1.11	32,901	554		413				
Dover Coal Co	100,000	1,805	1,805		4,061	2.25	1.11	1.11	1,500	100	100	105				
Duncan, Chas	1,000	1,000	1,000		2,250	2.25	1.12	1.12		1,000						
Duncan, Harvey	700	1,064	1,064		2,394	2.25	1.37	1.37		996	26	42				
Fallman, Edw		200	200		450	2.25	1.25			200						
Farmers C. Co. Nos. 1-3-6 & 7	150,000	52,604		52,604	113,098	2.15			48,839		1,779	1,986	18	$.72	$2.76	$2.56
Gann & Bledsoe		335	335		837	2.50	1.35	1.25		325		10				
Hohenwald Bros	7,000	914	914		2,285	2.50	1.25	1.25		914						
Independence C. M'g Co	40,000	5,400	5,400		10,800	2.00	1.11	1.11	3,600	1,200		600				
Kratz & Son		833	833		1,666	2.00	1.12	1.12		800	25	8				

LAFAYETTE COUNTY—Continued

Name of company or person operating.	Capitalization	Total tons of coal mined in 1908	Tons of coal mined by		Total value of coal, 1908	Prices received at the mines	Prices paid per ton for mining coal—pick work		Coal, how disposed of.				No. of machines used	Machine employes—prices paid.		
			Pick work	Machines			Winter	Summer	Shipped by rail	Hauled away in wagons	Consumed by miners	Used at the mines		Miners, per ton	Machine runners, per day	Machine helpers, per day
Labor Exchange No. 305		13,138	13,138		$24,962	$1.90	$1.30	$1.20	12,295	353	179	311				
Lanning-Harris C. & G. Co	$225,000	30,821	1,000	29,821	58,559	1.90	.67	.67	28,616		952	1,253	6	$ .67	$2.56	$2.56
Looney Mine		2,410	2,410		2,538	1.80	1.25		2,220	10		180				
Martin, Jacob		400	400		900	2.25	1.50			400						
McGrew Coal Co	30,000	79,112		79,112	174,046	2.20			76,802		210	2,100	14	.76	2.76	2.56
Perry Bros		1,068	1,068		2,136	2.00	1.25	1.25		1,068						
Plattenburg Coal Co	2,000	4,500	4,500		9,000	2.00	1.25	1.25		4,500						
Pointer, C. S		600	600		1,350	2.25	1.25	1.25		600						
Rust, W. C	1,600	225	225		562	2.50	1.50	1.50		223	2					
Sipe, C. C		4,447	4,447		12,229	2.75	1.37	1.37		4,447						
Stolin, Antone	5,000	1,541	1,541		3,660	2.37	1.11	1.11		1,530		11				
Stoll Bros		1,322	1,322		2,644	2.00	1.25	1.15		1,322						
Summers, M. W	6,500	1,827	1,827		4,111	2.25	1.50	1.50		1,800	27					
Tyler, W		400	400		1,000	2.50	1.40			400						
Van Gilder, E. M		3,305	3,305		6,032	1.82	1.11	1.11	3,283		12	10				
Waverly Brick & Coal Co		2,320	2,320		3,410	1.47	.70		1,770	100		450				
Waverly Coal Co	100,000	8,403	8,403		12,604	1.50	.70	.70	6,500	1,000	420	483				
Western C. & M. Co	1,000,000															
Glen Oak Mine		6,802	6,802		10,444	1.53	1.20		6,600	65		137				
Valley Mine		71,896	1,221	70,675	110,389	1.53	1.20		71,097	114		685	4	.76	2.76	2.56
Midway Mine		87,112		87,112	133,752	1.53			83,146	340		3,626	6	.76	2.76	2.56
Summit Mine		84,686		84,686	130,027	1.53			81,976	1,588		1,122	5	.76	2.76	2.56
Seawell Mine		5,435	5,435		8,345	1.53	1.20	1.20	5,435							
South Mine		22,513		22,513	34,566	1.53			21,466	67		980	4	.76	2.76	2.56
Wright, J. J		120	120		300	2.50	1.25	1.25		120						
Wright, Samuel		1,440	1,440		2,880	2.00	1.37			1,400		40				
Totals		571,908	145,385	426,523	$1,034,334				512,131	40,752	4,067	14,958	57			

LEWIS COUNTY.

Monticello C. & M'g Co		123	123		$292	$2.37	$1.80			123						

LINN COUNTY.

Name of company or person operating.	Capitalization	Total tons of coal mined in 1908	Tons of coal mined by		Total value of coal, 1908	Prices received at the mines	Prices paid per ton for mining coal—pick work		Coal, how disposed of.				No. of machines used	Machine employes—prices paid.		
			Pick work	Machines			Winter	Summer	Shipped by rail	Hauled away in wagons	Consumed by miners	Used at the mines		Miners, per ton	Machine runners, per day	Machine helpers, per day
Barr Mine		3,000	3,000		$8,250	$2.75	$1.50	$1.50		2,880	120					
Bucklin C. & M'g Co	$15,000	940	940		2,585	2.75				900		40				
Crandall Coal Co	3,500	4,312	4,312		11,858	2.75	1.50	1.50		4,312						
Landreth Coal Co		4,476	4,476		12,309	2.75	1.32	1.32		4,476						
Marceline C. & M'g Co	30,000	85,232	85,232		176,430	2.07	1.22	1.22	79,316	4,736		1,180				
Sheehan, J. E		5,000	5,000		15,000	3.00	1.50			5,000						
Wine, H. F	12,000	1,280	1,280		3,840	3.00	1.50	1.50		1,280						
Totals		104,240	104,240		$230,272				79,316	23,584	120	1,220				
LIVINGSTON COUNTY.																
Cox, J. O		1,010	1,010		$2,020	$2.00	$1.25	$1.00		1,000		10				
MONROE COUNTY.																
Gilbert, J. B	$2,500	800	800		$2,200	$2.75	$1.75	$1.75		800						
MONTGOMERY COUNTY.																
Noel, Buford		250	250		$625	$2.50	$1.25			250						
Whitehead, H. & Son		1,132	1,132		2,830	2.50	1.25	$1.25		1,100	32					
Totals		1,382	1,382		$3,455					1,350	32					
MORGAN COUNTY.																
Ouachita Coal & Clay Co	$1,000,000	1,683	1,683		$3,787	$2.25	$1.00	$1.00	1,252	41		390				

MACON COUNTY.

Name of company or person operating.	Capitalization......	Total tons of coal mined in 1908.....	Tons of coal mined by		Total value of coal, 1908.............	Prices received at the mines........	Prices paid per ton for mining coal—pick work		Coal, how disposed of.				No. of machines used	Machine employes—prices paid.		
			Pick work...	Machines....			Winter...	Summer...	Shipped by rail.	Hauled away in wagons......	Consumed by miners.......	Used at the mines........		Miners, per ton........	Machine runners, per day	Machine helpers, per day.
Central C. & C. Co. No. 10	$7,000,000	16,403	16,403		$22,964	$1.40	$ .67	$ .67	15,559	82	116	646				
Central C. & C. Co. No. 24		27,019	27,019		37,826	1.40	.67	.67	25,835	12		1,172				
Central C. & C. Co. No. 25		133,699	133,699		187,179	1.40	.67	.67	131,136		63	2,500				
Central C. & C. Co. No. 28		94,642	94,642		132,499	1.40	.67	.67	92,516	80		2,046				
Central C. & C. Co. No. 61		164,096	164,096		229,734	1.40	.67	.67	159,001	56	540	4,499				
Central C. & C. Co. No. 66		128,755	128,755		180,257	1.40	.67	.67	126,135	239	181	2,200				
Dennis, J. H	4,000	1,746	1,746		3,928	2.25	1.30	1.30	50	1,606	50	40				
Gates, J. N	800	1,560	1,560		3,900	2.50	2.00			1,560						
Gronoway, D		1,250	1,250		2,375	1.90	1.25	1.25		1,236		14				
Helmet Mining Co	25,000	10,220	10,220		17,067	1.67	.85		9,763	148		309				
Hurd & Hurd	3,000	4,000	4,000		5,600	1.40	1.12	1.12		4,000						
Isaacson & Underwood	800	976	976		1,561	1.60	.85			976						
James Bros		3,580	3,580		7,160	2.00	.95	.95	3,580							
Jones, Jno. H		2,538	2,538		5,076	2.00	.67	.67		2,057	43	438				
Lunsford, H. & A. G		512	512		896	1.75	1.50	1.50		504		8				
Northwestern C. & M. Co. No. 8	150,000	127,729	127,729		187,761	1.47	.67	.67	123,192	1,281	1,281	1,975				
Northwestern C. & M. Co. No. 9		128,061	128,061		184,408	1.44	.67	.67	126,402			1,659				
Smith & Hall		3,510	3,510		6,142	1.75	1.00	1.00		3,500	10					
Vestal & Wyatt		834	834		1,251	1.50	1.00			834						
Totals		851,130	851,130		$1,217,584				813,169	18,171	2,284	17,506				

MONITEAU COUNTY

Name of company or person operating.	Capitalization	Total tons of coal mined in 1908	Pick work	Machines	Total value of coal, 1908	Prices received at the mines	Winter	Summer	Shipped by rail	Hauled away in wagons	Consumed by miners	Used at the mines	No. of machines used	Miners, per ton	Machine runners, per day	Machine helpers, per day
Monarch Coal & M'g Co		2,000			$6,000	$3.00			93	1,607		300	2			
Bolin Mining Co		300			750					300						
Morrow, I. G		800			2,000					800						
Totals		3,100			$8,750				93	2,707		300				

PLATTE COUNTY.

Name of company or person operating.	Capitalization	Total tons of coal mined in 1908	Pick work	Machines	Total value of coal, 1908	Prices received at the mines	Winter	Summer	Shipped by rail	Hauled away in wagons	Consumed by miners	Used at the mines	No. of machines used	Miners, per ton	Machine runners, per day	Machine helpers, per day
Home Riverside Coal Co	$650,000	190,306	190,306		$380,612	$2.00	$ .95	$ .95	143,893	34,343	3,363	8,707				

PUTNAM COUNTY.

Name of company or person operating.	Capitalization	Total tons of coal mined in 1908	Tons of coal mined by		Total value of coal, 1908	Prices received at the mines	Prices paid per ton for mining coal—pick work		Coal, how disposed of.				No. of machines used	Machine employes—prices paid.		
			Pick work	Machines			Winter	Summer	Shipped by rail	Hauled away in wagons	Consumed by miners	Used at the mines		Miners, per ton	Machine runners, per day	Machine helpers, per day
Baugher, A. W		150	150		$187	$1.25	$1.05			150						
Blackbird-Block Coal Co	$40,000	1,670	1,670		3,340	2.00	.91	$ .91	1,630	10		30				
Humphrey Richard		280	280		350	1.25	1.00			280						
Jones, Geo. F		616	616		924	1.50	1.18			616						
Means, J. R	1,700	980	980		2,205	2.25	.91	.91	80	800	30	70				
Moore Coal Co		1,600	1,600		3,200	2.00	1.00			1,600						
Mendota Coal Co. No. 2	200,000	11,200	11,200		19,174	1.71	.91	.91	10,853	48	49	250				
Mendota Coal Co. No. 9		13,422	13,422		22,428	1.67	.91	.91	12,858	182	182	200				
Medlin Coal Co. No. 7		7,416	7,416		11,094	1.49	.91	.91	7,278	29	29	80				
Mo. M'g, Mfg. & Merc. Co	450,000	2,350	2,350		4,700	2.00	.91	.91	2,300		10	40				
Robbins, J. A	4,000	1,600	1,600		2,400	1.50	1.00			1,564	36					
Rogers Coal Co	6,000	11,294	11,294		18,974	1.68	.91	.91	11,140	37	36	81				
Seavey, J. E		664	664		1,328	2.00	1.25	1.25		645	16	3				
Stevens, A	1,200	400	400		800	2.00	1.25	1.25		400						
Shelton, Elmer	4,000	863	863		1,079	1.25	1.00	1.00		850	13					
Totals		54,505	54,505		$92,183				46,139	7,211	401	754				

RALLS COUNTY.

Name of company or person operating.	Capitalization	Total tons of coal mined in 1908	Pick work	Machines	Total value of coal, 1908	Prices received at the mines	Winter	Summer	Shipped by rail	Hauled away in wagons	Consumed by miners	Used at the mines	No. of machines used	Miners, per ton	Machine runners, per day	Machine helpers, per day
Barger, John		120	120		$300	$2.50	$1.75			120						
Clark Coal Co	$4,000	5,268	5,268		9,008	1.71	1.07	$1.07	5,188	40	40					
Jackson, Chas	2,000	25	25		62	2.50	1.00	1.00		25						
Peer, H. M		206	206		515	2.50				206						
Ralls County Coal Co	8,000	6,574	6,574		11,965	1.82	1.02	1.02	6,574							
Smith, Henry		900	900		2,250	2.50	1.50	1.50		900						
Tighe M'g Co	5,000	1,322	1,322		2,485	1.88	1.07		1,146	97	79					
Totals		14,415	14,415		$26,585				12,908	1,388	119					

RANDOLPH COUNTY.

Name of company or person operating.	Capitalization	Total tons of coal mined in 1908	Tons of coal mined by		Total value of coal, 1908	Prices received at the mines	Prices paid per ton for mining coal—pick work		Coal, how disposed of.				No. of machines used	Machine employes—prices paid.		
			Pick work	Machines			Winter	Summer	Shipped by rail	Hauled away in wagons	Consumed by miners	Used at the mines		Miners, per ton	Machine runners, per day	Machine helpers, per day
Bowden, John		480	480		$720	$1.50	$1.00			480						
Butler, C. W	$1,600	1,824	1,824		2,280	1.25	.56	$ .56	1,664	160						
Clark, D. E	400	4,000	4,000		5,333	1.33	.67	.67	3,000	1,000						
Eravi, Jas		240	240		360	1.50	1.25	1.25		240						
Griffin, Chas		500	500		900	1.80	.67	.67	300	200						
Hardy, Wm		1,500	1,500		2,625	1.75	1.00	1.00		1,500						
McCronan, J. M	300	2,400	2,400		3,600	1.50	.67	.67		2,400						
McKiernan, W. H	500	3,933	3,933		5,978	1.52	.67	.67		3,933						
McCune, J. H	5,000	280	280		462	1.65	.67			280						
Milburn Bros	3,000	968	968		1,597	1.75	1.00			960		8				
Morris, Geo	5,000	50	50		62	1.25	.67			50						
Orris Coal Co		9,264	9,264		13,399	1.45	.67	.67	8,910	231	23	100				
Pilkington, John	1,500	720	720		1,080	1.50	1.00	1.00		720						
Sneed & Snow		2,000	2,000		3,500	1.75	.67		1,500	500						
Totals		28,159	28,159		$41,896				15,374	12,654	23	108				
Miscellaneous reports		3,107			5,182											
Grand Total		31,266			$47,078											

RAY COUNTY.

Name of company or person operating.	Capitalization	Total tons of coal mined in 1908	Tons of coal mined by		Total value of coal, 1908	Prices received at the mines	Prices paid per ton for mining coal—pick work		Coal, how disposed of.				No. of machines used	Machine employes—prices paid.		
			Pick work	Machines			Winter	Summer	Shipped by rail	Hauled away in wagons	Consumed by miners	Used at the mines		Miners, per ton	Machine runners, per day	Machine helpers, per day
Anderson, C. C		278	278		$556	$2.00	$1.11			278						
Bisbee, Wm		448	448		1,120	2.50	1.37			448						
Blair, Hugh	$10,000	1,596	1,596		3,990	2.50	1.12			1,560	36					
Blair Coal Co	5,000	800	800		1,600	2.00	1.11			800						
Brockman, G. C. & A. B		14,000	14,000		17,500	1.25				14,000						
Calnen-Blair C. Co	2,400	3,000	3,000		5,400	1.80	1.11		2,500		250	250				
Central C. & C. Co. No. 50	7,000,000	34,828	2,791	32,037	66,173	1.90	.67	$ .67	32,504	876	630	818	5		$2.76	$2.56
Clark, Jacob		278	278		556	2.00	1.60	1.60		278						
Collier, J. W		612	612		1,530	2.50	1.50	1.50		588	12	12				
Crawford-Wilson C. Co	20,000	20,032	20,032		34,054	1.70	1.11	1.11	19,167	327	327	211				
Crispen & Ward	5,000	5,759	5,759		10,366	1.80	1.11	1.11	3,759	2,000						
Daugherty, C. M	8,000	66	66		148	2.25	1.50	1.50		60	4	2				
Doran, Jno	300	835	835		2,087	2.50	1.75	1.75		811	24					

RAY COUNTY—Continued.

Name of company or person operating.	Capitalization	Total tons of coal mined in 1908	Tons of coal mined by		Total value of coal, 1908	Prices received at the mines	Prices paid per ton for mining coal—pick work		Coal, how disposed of.				No. of machines used	Machine employes—prices paid.		
			Pick work	Machines			Winter	Summer	Shipped by rail	Hauled away in wagons	Consumed by miners	Used at the mines		Miners, per ton	Machine runners, per day	Machine helpers, per day
Fowler, C. & M. Co.	$7,000	16,602	16,602		$29,053	$1.75	$1.11	$1.11	16,102	200	100	200				
Gant, J. M	600	40	40		90	2.25	1.50			40						
Good & Turner	1,000	2,270	2,270		5,675	2.50	1.11	1.11	120	2,000		150				
Heisinger, Henry	1,000	1,700	1,700		3,400	2.00	1.70	1.70		1,600	100					
Huston, Fred	1,000	314	314		785	2.50	2.00	2.00		286		28				
Hughes, A	10,000	1,000	1,000		2,000	2.00	1.25	1.25		1,000						
Hymer, O. P.		396	396		990	2.50	1.25			390		6				
Johnson, L. E		260	260		585	2.25	1.50	1.50		260						
Loeven, M. J		680	680		1,530	2.25	1.62			680						
Loeven, Theo		280	280		700	2.50	1.50	1.50		230	30	20				
Love, Jas.	8,000	75	75		187	2.50	2.00			70	5					
Maple Hill C. Co.	15,000	3,045	3,045		5,603	1.84	1.11	1.11	2,314	584		147				
Martin-Hubbel-Osborn C. Co.	5,000															
Mine No. 3		9,380	9,380		16,978	1.81	1.11	1.11	9,028		232	120				
Mine No. 7		21,399	21,399		38,732	1.81	1.11	1.11	20,453	365	365	216				
Mine No. 10		5,962	5,962		10,791	1.81	1.11		5,315	290	290	67				
Mine No. 22		8,078	2,380	5,698	14,621	1.81	.67		7,867			211	2		$2.76	$2.56
Mercantile C. & M. Co.	15,000	26,054	26,054		41,686	1.60	1.11	1.11	25,610			444				
McCorkendale, J. J	3,500	607	607		1,214	2.00	1.50	1.25		601		6				
McDaniel, J. L		8,000	8,000		16,000	2.00	1.12	1.12		8,000						
Ottman & Nelson	16,000	1,205	1,205		2,560	2.12	1.11	1.11		1,170	30	5				
Pence & Co	25,000	18,450	18,450		33,210	1.80	1.11	1.11	15,000	3,000		450				
Pence & Calnen	2,000	7,953	7,953		13,520	1.70			7,588			365				
Pickering Coal Co.	5,000	38,759	38,759		65,115	1.68	1.11	1.11	36,804	1,594		361				
Ray County C. Co.	80,000	1,559	1,559		2,650	1.70	1.22	1.22	1,332	187		40				
Richmond & Camden C. Co.	200,000	29,562	29,562		62,376	2.11	1.11	1.11	26,721	1,700		1,141				
Rice, Perry		2,400	2,400		4,800	2.00	1.11	1.11	80	2,320						
Shea, Thos.	4,000	594	594		1,188	2.00	1.11	1.11		577	12	5				
Schooler & Bates	15,000	2,170	2,170		5,154	2.37	1.11	1.11	300	1,500	250	120				
Thompson, G. W	6,000	900	900		1,800	2.00	1.11			900						
Watson, J. N.	2,800	500	500		1,000	2.00	1.11			500						
Whitmer, C. & M. Co.	6,500	1,127	1,127		1,916	1.70	1.11		363	584	150	30				
Woodruff, Jno.		377	377		942	2.50	1.50	1.50		377						
Totals		294,230	256,495	37,735	$531,931				232,927	53,031	2,847	5,425	7			

ST. CLAIR COUNTY.

Name of company or person operating.	Capitalization	Total tons of coal mined in 1908	Tons of coal mined by		Total value of coal, 1908	Prices received at the mines	Prices paid per ton for mining coal—pick work		Coal, how disposed of.				No. of machines used	Machine employes—prices paid.		
			Pick work	Machines			Winter	Summer	Shipped by rail	Hauled away in wagons	Consumed by miners	Used at the mines		Miners, per ton	Machine runners, per day	Machine helpers, per day
Cook, Jas. M	$500	332	332		$830	$2.50				332						
Griggs, L. L	1,600	250	250		625	2.50	$1.25	$1.25		240	10					
Hunt, Chas		150	150		300	2.00	.75			150						
Wooden, H. N		80		80	160	2.00				60	10	10	1	$.62		
Totals		812	732	80	$1,915					782	20	10				

SCHUYLER COUNTY.

Name of company or person operating.	Capitalization	Total tons of coal mined in 1908	Pick work	Machines	Total value of coal, 1908	Prices received at the mines	Winter	Summer	Shipped by rail	Hauled away in wagons	Consumed by miners	Used at the mines	No. of machines used	Miners, per ton	Machine runners, per day	Machine helpers, per day
Blausett, B. F		660	660		$1,155	$1.75	$1.00			660						
Golston, Ira		125	125		312	2.50	1.25			125						
Grindle & Mock		1,420	1,420		2,485	1.75	1.00			1,400		20				
Hymes, J. W		120	120		240	2.00	1.25			120						
Long, G. B		100	100		175	1.75	1.25			100						
Totals		2,425	2,425		$3,367					2,405		20				

SALINE COUNTY.

Name of company or person operating.	Capitalization	Total tons of coal mined in 1908	Pick work	Machines	Total value of coal, 1908	Prices received at the mines	Winter	Summer	Shipped by rail	Hauled away in wagons	Consumed by miners	Used at the mines	No. of machines used	Miners, per ton	Machine runners, per day	Machine helpers, per day
Garver, J. N		150	150		$300	$2.00	$1.50			150						

SULLIVAN COUNTY.

Name of company or person operating.	Capitalization	Total tons of coal mined in 1908	Pick work	Machines	Total value of coal, 1908	Prices received at the mines	Winter	Summer	Shipped by rail	Hauled away in wagons	Consumed by miners	Used at the mines	No. of machines used	Miners, per ton	Machine runners, per day	Machine helpers, per day
Milan Coal Co		3,013			$5,558	$2.19			44	2,494	475					
Watson, J. G		250			500	2.00				250						
Totals		3,263			$6,058				44	2,744	475					

VERNON COUNTY.

Name of company or person operating.	Capitalization	Total tons of coal mined in 1908	Tons of coal mined by		Total value of coal, 1908	Prices received at the mines	Prices paid per ton for mining coal—pick work		Coal, how disposed of.				No. of machines used	Machine employes—prices paid.		
			Pick work	Machines			Winter	Summer	Shipped by rail	Hauled away in wagons	Consumed by miners	Used at the mines		Miners, per ton	Machine runners, per day	Machine helpers, per day
Brown, A. S.	....	720	720	....	$900	$1.25	$ .75	....	40	680	....	....	....	....	....	....
Central C. & C. Co.	$7,000,000	49,689	49,689	....	74,533	1.50	.62	$ .62	45,342	2,347	....	2,000	....	....	....	....
Ewing, W. H.	....	120	120	....	300	2.50	1.50	....	....	120	....	....	....	....	....	....
Flake, J. W.	....	28	28	....	70	2.50	....	....	....	28	....	....	....	....	....	....
Hill, W. L.	10,000	840	840	....	1,680	2.00	.80	....	....	840	....	....	....	....	....	....
Koch, Herman	....	800	800	....	2,000	2.50	....	....	....	800	....	....	....	....	....	....
Totals	....	52,197	52,197	....	$79,483	....	....	....	45,382	4,815	....	2,000	....	....	....	....

ADAIR COUNTY.

Name of company or person operating.	Kind of mine opening.	Depth of shaft	Thickness of seam.		Power.	How ventilated.	Plan of working.	Powder.		Employes—men engaged at mines.				Total No. employes.	
			Feet	Inches				Kegs consumed	Cost to miners	Miners.		Other help.		Winter	Summer
										Winter.	Summer	Winter.	Summer		
Big Creek Coal Co	Shaft	84	3	06	Steam	4½ ft. fan	Pillar and room	58	$116	4	2	1	1	5	3
Consolidated Stahl Coal Co	Drift		3	04	Electricity	Natural	Long wall			50	30	3	2	53	32
Great Northern Fuel Co. No. 23	Shaft	65	3	10	Steam	14 ft. fan	Pillar and room	2,248	4,496	35	30	30	27	65	57
Great Northern Fuel Co. No. 1	Shaft	137	4		Steam	14 ft. fan	Pillar and room	267	534	11		11		22	
Great Northern Fuel Co. No. 7	Shaft	85	3	10	Steam	14 ft. fan	Pillar and room	3,186	6,372	55	51	45	43	100	94
Harl Coal Co	Shaft	84	3	06	Steam	4 ft. fan	Pillar and room			4	2	1	1	5	3
Hazel Creek Coal Co	Slope		4		Horse	Furnace	Pillar and room	30	60	4		1		5	
Ideal Block Coal Co	Drift		3	06	Horse	Furnace	Long wall			30		6		36	
Ivie, J. M. & Sons	Shaft	140	3	08	Steam	12 ft. fan	Pillar and room	375	750	15	8	5	2	20	10
Kansas City Midland Coal Co	Shaft	142	3	06	Steam	6 ft. fan	Pillar and room	6,000	12,000	175	140	75	50	250	190
Lee, John, Mine	Slope		3	08	Horse	Furnace	Pillar and room	60	120	3				3	
Manufacturers C. & C. Co. No. 1	Slope		3	06	Steam	12 ft. fan	Pillar and room	2,927	5,854	66	53	30	28	96	81
Manufacturers C. & C. Co. No. 4	Slope		3	06	Steam	12 ft. fan	Pillar and-room	3,455	6,910	58	47	26	28	84	75
Manufacturers C. & C. Co. No. 50	Shaft	76	3	06	Steam	14 ft. fan	Pillar and room	3,366	6,732	68	47	34	35	102	82
Rombauer C. Co. No. 2	Shaft	75	3	04	Steam	12 ft. fan	Pillar and room	9,304	18,608	168	152	80	75	248	227
Rombauer C. Co. No. 3	Shaft	85	3	08	Steam	12 ft. fan	L. W. P. and R	4,158	8,316	170	140	85	63	255	203
AUDRAIN COUNTY.															
Audrain Coal Co	Shaft	86	2	06	Steam	10 ft. fan	Long wall			40	40	10	10	50	50
Bevan Coal Co	Shaft	35	2	02	Horse	6 ft. fan	Long wall			6	4	1	1	7	5
Davis & Watson	Shaft	130	2	04	Steam	10 ft. fan	Long wall			15		6		21	
Davidson, Henry	Shaft	45	2	06	Horse	Natural	Long wall			4		1		5	
Edwards, J. A	Shaft	35	2	04	Horse	Natural	Long wall			4	2	1	1	5	3
Hammett, Edw	Shaft	25	2	03	Horse	Natural	Long wall			2	1			2	1
Mississippi Glass Co	Shaft	65	2	04	Steam	7 ft. fan	Long wall	315		11	10	9	9	20	19
Martinsburg Coal & Mfg. Co	Shaft	146	2	10	Steam	Fan	Long wall			20	20	4	4	24	24
Standard Coal Co	Shaft	60	3		Horse	Natural	Long wall			26	11	3	3	29	14

BARTON COUNTY

Name of company or person operating.	Kind of mine opening.	Depth of shaft	Thickness of seam.		Power.	How ventilated.	Plan of working.	Powder.		Employes—men engaged at mines.				Total No. employes.	
			Feet	Inches				Kegs consumed	Cost to miners	Miners. Winter	Miners. Summer	Other help. Winter	Other help. Summer	Winter	Summer
Beltz Bros	Slope		2	04	Hand	Natural	Pillar and room			2				2	
Bogartz, Wm	Strip pit		2	08								2		2	
Breivogel & Sanders	Drift		2	04	Horse	Natural	Pillar and room			3	2	1	1	4	3
Brooks Bros	Strip pit		2	06				50	$100	8				8	
Cackley, J. T	Drift		2	04	Hand	Natural	Pillar and room			8	2	2	2	10	4
Clark Bros	Strip pit			11				1	2			2		2	
Correlli Coal Co	Shaft	48	3		Steam	Natural	Pillar and room			15	15	3	3	18	18
Cross, J. N	Slope		2	04	Hand	Natural	Pillar and room			2				2	
Creekmore, W. P	Slope		2	04	Hand	Natural	Pillar and room	15	20	1	1			1	1
Davis Coal Co	Slope		2	08	Horse	Furnace	Pillar and room	150	300	8	6	2	2	10	8
Givet, W. H	Strip pit		2					10	14						
Gray, Geo	Strip pit		3					100	150			4	4	4	4
Hembree, J. T	Shaft	25	3		Steam	Fan	Pillar and room	577	1,154	20	10	3	3	23	13
Imperial Coal Co	Shaft	132	2	09	Steam	Furnace	Pillar and room	550	1,100	19	19	2	2	21	21
Lawrence, F	Drift		1	08	Hand	Natural	Pillar and room			4				4	
Lasley, W. B	Strip pit									7				7	
Lavery Coal Co	Strip pit		2	04				200	230	10	10			10	10
Mulkins, T. E	Drift		2	08	Hand	Natural	Pillar and room	11	18	3	3			3	3
Orahud, A. J	Strip pit		1					2	4	2	2			2	2
Orahud, Wm	Strip pit		1					1	2	1	1			1	1
Peck & Brummett	Drift		1		Hand	Natural	Pillar and room			2				2	
Perry, A. J	Slope		2	03	Horse	Natural	Pillar and room			1	1			1	1
Pullen & Sons Coal Co	Shaft	37	2	08	Steam	6 ft. fan	Pillar and room	300	600	8	8	4	4	12	12
Rector, G. W	Slope		2		Hand	Natural	Pillar and room			4				4	
Rector, W. B	Drift		2	04	Hand	Natural	Pillar and room			6	2			6	2
Stephenson, J. J. Coal Co	Strip pit		3	04				55	110						
Stone, C. T	Drift		2	04		Natural	Long wall			3	2			3	2
Wear Coal Co	Shaft		3		Steam	10 ft. fan	Pillar and room	2,616	5,232	75	65	20	20	95	85
Western C. & M'g Co. No. 9	Slope		3		Steam	10 ft. fan	Pillar and room	501	1,002	30	30	5	5	35	35
Western C. & M'g Co. No. 7	Shaft	62	3		Steam	12 ft. fan	Pillar and room			83	83			83	83

BATES COUNTY.

Name of company or person operating.	Kind of mine opening.	Depth of shaft	Thickness of seam.		Power.	How ventilated.	Plan of working.	Powder.		Employes—men engaged at mines.				Total No. employes.	
			Feet	Inches				Kegs consumed	Cost to miners.	Miners. Winter..	Miners. Summer	Other help. Winter..	Other help. Summer	Winter......	Summer.....
Ayer, U	Strip pit		4	06				10							
Atlas Coal Co	Shaft	275	4	06	Steam	14 ft. fan	Pillar and room	1,758	$3,516	75	75	35	35	110	110
Ackerman, J. T	Strip pit		2	08						3				3	
Arbogast, D. H.	Shaft	25	3		Horse	Natural	Pillar and room	30	45	3		2		5	
Carr Coal Co	Shaft	40	3	09	Steam	12 ft. fan	Pillar and room	190	380	30	30	7	7	37	37
Clark-Heckadon C. M'g Co.	Shaft	85	3	04	Steam	8 ft. fan	Pillar and room	402	804	15	10	2	2	17	12
Cook & Rankin	Strip pit		3												
Cooper-Wilson	Shaft	110	2	06	Steam	5 ft. fan	Pillar and room	50	80	5				5	
Decker, H. W.	Slope		3		Hand	Natural	Pillar and room	1				1		1	
Dunkerly Coal Co	Shaft	45	2	10	Horse	Furnace	Pillar and room	450	900	20	15	5	4	25	19
Duzan, J. M	Shaft	50	3		Horse	Furnace	Pillar and room	115	195	6	3			6	3
Engels, J. T.	Shaft	40	4	06	Horse	Natural	Pillar and room	368	644	6	6	4	4	10	10
Fleming Coal Co	Strip pit		4					150	300	6	6			6	6
Grooms, C. P.	Shaft	20	2	06	Horse	Natural	Pillar and room			2				2	
Harris, J. A.	Strip pit		2	06											
Henley, R. J.	Strip pit		2	09				4	6			1		1	
Heatherly, J. & Son	Shaft	35	2	11	Horse	Furnace	Pillar and room	100	200	6		3		9	
Henderson Bros	Slope		4	08	Horse	Natural	Pillar and room								
Hines, E. T	Slope		3	06	Horse	Furnace	Pillar and room	180	315	7	7	3	3	10	10
Holland Coal Co	Shaft	35	2	08	Horse	Furnace	Pillar and room	600	1,080	22	18	7	6	29	24
Houghton, C. E	Slope		3	03	Horse	Natural	Pillar and room	55	96	3	3			3	3
Hughes Coal Co	Drift		3	04	Horse	Natural	Pillar and room	40	80	5		1		6	
Jones Coal Co	Shaft	35	4	06	Hand	Furnace	Pillar and room	500	1,000	12	12	8	8	20	20
Johnson, King	Slope		3		Hand	Natural	Pillar and room			4	4	3	3	7	7
McClendon, Harry	Shaft	18	2	06	Horse	Natural	Long wall			4		1		5	
McCullough, Williams & Stover	Slope		3	04	Horse	Natural	Pillar and room	20	30	3				3	
McComb Est. (David)	Strip pit		4	08								3		3	
Pearson Bros	Strip pit		4	04				20				2	2	2	2
Peeler, D. D	Strip pit		4	10				20	30	3	7			3	7
Ritchie, H. C.	Slope		4	06	Hand	Natural	Pillar and room			6		3		9	
Roberts, Jos	Strip pit											3		3	
Shelton & Metzler	Strip pit		3	02				20	30	10				10	
Shelton & Williams	Strip pit		3	02	Hand										
Smalley, J. M.	Slope		2	08	Hand	Natural	Pillar and room	15	24			2		2	
Standard Coal Co	Shaft	41	3	04	Horse	Natural	Pillar and room	200	400	12	8			12	8
Sprague Mine	Shaft	50	3		Hand	Furnace	Pillar and room								
Scott, Thos	Strip pit		3	10	Hand			5	9	1		1		2	
Treasurer & Littlefield	Strip pit		3	04		Natural				6				6	
Tatley, J. V.	Shaft	38	2	10	Horse	7½ ft. fan	Pillar and room	140	280	25	10	4	2	29	12
Tarver, E. R.	Drift		5		Horse			30	60	3		1		4	

Name of company or person operating.	Kind of mine opening.	Depth of shaft	Thickness of seam.		Power.	How ventilated.	Plan of working.	Powder.		Employes—men engaged at mines.				Total No. employes.	
			Feet	Inches				Kegs consumed	Cost to miners.	Miners.		Other help.		Winter	Summer
										Winter..	Summer	Winter..	Summer		
BOONE COUNTY.															
Davis & Watson Coal Co	Shaft	107	3	02	Horse	Furnace	Pillar and room	225	$450	15	8	6	3	21	11
Gray, J. T.	Slope		3		Horse	Furnace	Pillar and room	60	120	6	2	2		8	2
McGee & Davis Bros.	Shaft	30	3		Horse	Furnace	Pillar and room	40	80	5		2		7	
Prather, W. R.	Shaft	60	3	06	Horse	Furnace	Pillar and room	300	600	30	10	6	2	36	12
Shock, R. L.	Shaft	28	3	08	Horse	Furnace	Pillar and room	40	80	5	2			5	2
Sutton, W. C.	Slope		3	04	Hand	Natural	Pillar and room	50	100	4	4			4	4
White, M. R.	Slope		3	10	Hand	Natural	Pillar and room	10	17	5	6			5	6
White, J. H.	Slope		3	10	Hand	Natural	Pillar and room			8				8	
CALDWELL COUNTY.															
Caldwell Coal Co	Shaft	507	1	08	Steam	10 ft. fan	Long wall			50	30	9	7	59	37
CALLAWAY COUNTY.															
Bell, Eli	Shaft	35	2	06	Horse	Natural	Long wall			2	2			2	2
Diehl, Henry	Shaft	48	2	04	Horse	Natural	Long wall	4	$9	6	6	1	1	7	7
Fulton Coal Co.	Shaft	85	3		Steam	8 ft. fan	Long wall	4		30	15	3	1	33	16
Harris, Fred	Shaft	60	3		Horse	4 ft. fan	Long wall	20	40	10	6	2	2	12	8
Morsinkoff, Jno. A.	Drift		2	06		Natural	Long wall			1	1			1	1
McCown, Robt	Shaft	50	3		Horse	Furnace	Pillar and room								
Nicholson, C. M	Shaft	52	3		Horse	Natural	Pillar and room	75	131	4	6			4	6
Reed, J. F.	Shaft	36	2	06	Horse	Furnace	Long wall	8	16	6	4			6	4
Skelley, E.	Shaft	30	3		Horse	Furnace	Pillar and room	100	180						
Smith, David	Shaft	60	2	06	Steam	4 ft. fan	Long wall			8		2		10	
Simmonds, J. W.	Slope		2	02	Horse	Furnace	Long wall			20	5	4	2	24	7
CASS COUNTY.															
Cherokee C. & M'g Co.	Shaft	156	2	09	Steam	6 ft. fan	Pillar and room	600	$1,200	20	20	8	8	28	28

CARROLL COUNTY.

Name of company or person operating.	Kind of mine opening.	Depth of shaft	Thickness of seam.		Power.	How ventilated.	Plan of working	Powder.		Employes—men engaged at mines.				Total No. employes.	
										Miners.		Other help.			
			Feet	Inches				Kegs consumed	Cost to miners.	Winter.	Summer	Winter.	Summer	Winter	Summer
Brown, Chas. & Co	Shaft	40	1	08	Horse	Natural	Long wall			4	5			4	5
Cowan, R. M.	Drift		2		Hand	Natural	Long wall			1				1	
Keynon, J. A	Slope		1	10	Horse	Natural	Long wall	10	$15	3				3	
Odell, Jas.	Shaft	37	1	10	Horse	Natural	Long wall			3				3	

CEDAR COUNTY.

Name of company or person operating.	Kind of mine opening.	Depth of shaft	Feet	Inches	Power.	How ventilated.	Plan of working	Kegs consumed	Cost to miners.	Miners Winter.	Miners Summer	Other help Winter.	Other help Summer	Total Winter	Total Summer
Taylor, R. J.	Slope		2	06	Horse	Natural	Pillar and room								

CHARITON COUNTY.

Name of company or person operating.	Kind of mine opening.	Depth of shaft	Feet	Inches	Power.	How ventilated.	Plan of working	Kegs consumed	Cost to miners.	Miners Winter.	Miners Summer	Other help Winter.	Other help Summer	Total Winter	Total Summer
Frazier, S. W. & Son	Shaft	50	2	02	Horse	Furnace	Long wall			3	3	1	1	4	4
Kahler, W. J.	Strip pit		1	06								1		1	
Rothville C. & M'g Co.	Drift		1	04	Hand	Natural	Long wall								
Strickland, J. C	Drift		1	06	Hand	Natural	Long wall			3				3	
Wampler Coal Co.	Shaft	75	1	11	Horse	Natural	Long wall			5	3	1	1	6	4

CLAY COUNTY.

Name of company or person operating.	Kind of mine opening.	Depth of shaft	Feet	Inches	Power.	How ventilated.	Plan of working	Kegs consumed	Cost to miners.	Miners Winter.	Miners Summer	Other help Winter.	Other help Summer	Total Winter	Total Summer
Missouri City Coal Co	Shaft	166	1	08	Steam	10 ft. fan	Long wall			100	100	22	22	122	122

COLE COUNTY.

Name of company or person operating.	Kind of mine opening.	Depth of shaft	Feet	Inches	Power.	How ventilated.	Plan of working	Kegs consumed	Cost to miners.	Miners Winter.	Miners Summer	Other help Winter.	Other help Summer	Total Winter	Total Summer
Bandelier, S. & A.	Shaft	120	3	09	Steam	Natural	Pillar and room	15	$28	3		2		5	

DADE COUNTY.

Name of company or person operating.	Kind of mine opening.	Depth of shaft	Thickness of seam.		Power.	How ventilated.	Plan of working.	Powder.		Employes—men engaged at mines.				Total No. employes.	
										Miners.		Other help.			
			Feet	Inches				Kegs consumed	Cost to miners.	Winter	Summer	Winter	Summer	Winter	Summer
Davis Bros.	Slope		2	06	Horse		Pillar and room.			3				3	
Duncan, C. C.	Drift		2	06	Horse	Natural	Pillar and room.				1				1
Hickman, O.	Shaft	40	2	06	Horse	Natural	Pillar and room.				5		3		8
McCluey, L. V.	Shaft	36	2	06	Horse	Natural	Pillar and room.			3	1	1		4	1
Sporman, Edw.	Shaft	38	2	06	Horse	Furnace	Pillar and room.			4	2			4	2
Stout, W. A.	Shaft	20	2	04	Horse	Natural	Pillar and room.			8	2			8	2
GRUNDY COUNTY.															
Trenton Mining Co.	Shaft	225	1	06	Electricity	10 ft. fan	Long wall			53	25	8	7	61	32
HENRY COUNTY.															
Anaconda Coal Co.	Shaft	10	3		Horse	Natural	Pillar and room.	30	$60	2	2	1	1	3	3
Barnhart, F. A.	Shaft	50	1	10	Horse	Furnace	Pillar and room.			14	6	3	2	17	8
Bowen Coal Co.	Shaft	75	5	06	Steam	12 ft. fan	Pillar and room.	9,000	18,000	225	200	75	60	300	260
Brush Coal Co.	Shaft	34	3		Horse	Furnace	Pillar and room.	480	960	20	20	8	8	28	28
Church Coal Co.	Shaft	38	3		Horse	Furnace	Pillar and room.			12	12	6	6	18	18
Dickey Clay Mfg. Co. No. 6	Shaft	55	2	08	Steam	10 ft. fan	Pillar and room.	499	998	28	28	9	9	37	37
Dickey Clay Mfg. Co. No. 7	Shaft	34	2	08	Steam	10 ft. fan	Pillar and room.	528	1,056	28	28	9	9	37	37
England, Jas.	Shaft	60	3		Horse	Furnace	Pillar and room.	213	426	10	10	3	3	13	13
Hughes, W. E.	Shaft	20	4	10	Horse	Natural	Pillar and room.			7		1		8	
Hurst, Jno., Coal Co.	Shaft	54	3	02	Steam	12 ft. fan	Pillar and room.	300	600	23	23	6	6	29	29
Lane, E. M.	Slope		2	06	Hand	Natural	Long wall			12	8	3	3	15	11
Lewis Coal Co.	Shaft	35	2	10	Steam	Furnace	Long wall			25	25	5	5	30	30
Parks, A. F.	Slope		3	06		Natural	Long wall			15	10	3	2	18	12
Pharris, Thos.	Shaft	30	2		Horse	Furnace	Long wall	200	350	12	12	1	1	13	13
Rusk, Wm.	Shaft	30	2	09	Horse	Natural	Pillar and room.	100	160	5	3			5	3

Name of company or person operating.	Kind of mine opening.	Depth of shaft	Thickness of seam.		Power.	How ventilated.	Plan of working.	Powder.		Employes—men engaged at mines.				Total No. employes.	
			Feet	Inches				Kegs consumed	Cost to miners.	Miners. Winter.	Miners. Summer	Other help. Winter.	Other help. Summer	Winter	Summer
Collins, Wm.	Drift		2		Hand	Natural	Long wall			2	2			2	2
Fisher, John D.	Drift		2		Hand	Natural	Long wall			4	2			4	2
Gilvan, Jas.	Strip pit		3	10											
Jackson, R. S. (Rohr, O. B.)	Slope		1	04	Hand	Natural	Long wall			6	3			6	3
Pitney, Alex	Slope		3	06	Hand	Natural	Pillar and room.	10	$18	3				3	
Pitney, O. S.	Slope		3	06	Hand	Natural	Pillar and room.			4	2			4	2
Russell C. & M'g Co.	Slope		3	02	Steam	Furnace	Long wall			24	22	9	9	33	31
JOHNSON COUNTY.															
American Fuel Devel. Co.	Shaft	235	2	10	Steam	8 ft. fan	Pillar and room.	100		30	30	6	6	36	36
Burnes, M. F.	Strip pit		3												
Bullock, P. H.	Strip pit		2					5	$10		3	3		3	3
Bullock, D. A.	Drift		1	08		Natural	Pillar and room.			3	3			3	3
Greathouse, T. L.	Slope		2	04		Natural				2	1			2	1
Hammond, W. H.	Slope		2	06	Steam	Natural	Pillar and room.	10	12	4	2	1		5	2
Jacobs, W. D.	Shaft	27	1	08	Gasoline	Furnace	Pillar and room.			2				2	
Meiley, M. B.	Slope		1	08	Hand	Natural	Pillar and room.			4	1			4	1
Miller, Frank	Shaft	25	4	02	Horse	Furnace	Pillar and room.	50	100	4	4			4	4
McGrath, John	Strip pit		2												
Sutherland Coal Co.	Shaft	180	1	10	Steam	8 ft. fan	Long wall			4	3			4	3
Werling, M.	Shaft	25	1	10	Hand	Natural	Pillar and room.			5	2			5	2
LAFAYETTE COUNTY.															
Aull, Edw., Coal Co.	Slope		1	08	Steam	8 ft. fan	Long wall			42	45	10	10	52	55
Bell & Grier	Drift		1	07	Hand	Furnace	Long wall			20	8	5	3	25	11
Blacker, Wm.	Drift		1	06	Hand	Furnace	Long wall			5	2	1	1	6	3
Boedecker Coal Co.	Slope		1	06	Hand	Natural	Long wall			5	3			5	3
Bonanza Coal Co.	Shaft	72	1	08	Horse	8 ft. fan	Long wall			30		11		41	
Canterbury & Griffith	Drift		1	05	Horse	Furnace	Long wall			12	10			12	10
Clay, Tom	Drift		1	02	Hand	Furnace	Pillar and room.			10	6			10	6
Corder Coal Co.	Shaft	38	1	06	Horse	Furnace	Long wall								
Diamond Coal Co.	Shaft	56	1	08	Steam	10 ft. fan	Long wall			100	100	29	29	129	129
Diamond Coal Co.	Shaft	45	1	08	Horse	10 ft. fan	Long wall								
Dover Coal Co.	Drift		2		Steam	10 ft. fan	Long wall			20	20	4	4	24	24

LAFAYETTE COUNTY—Continued.

Name of company or person operating.	Kind of mine opening.	Depth of shaft	Thickness of seam. Feet	Thickness of seam. Inches	Power.	How ventilated.	Plan of working.	Powder. Kegs consumed	Powder. Cost to miners.	Employes—men engaged at mines. Miners. Winter.	Employes—men engaged at mines. Miners. Summer	Employes—men engaged at mines. Other help. Winter.	Employes—men engaged at mines. Other help. Summer	Total No. employes. Winter	Total No. employes. Summer
Duncan, Chas.	Drift		1	06	Hand	Furnace	Long wall			4	2			4	2
Duncan, Harvey	Drift		1	08	Hand	Furnace	Long wall			4	2			4	2
Fallman, Edw.	Drift		1	07	Hand	Furnace	Long wall			2				2	
Farmer's Coal Co.:															
Mine No. 1	Shaft	26	1	06	Steam and electricity	8 ft. fan	Long wall			200		150		350	
Mine No. 3	Shaft	50	1	06		10 ft. fan	Long wall								
Mine No. 6	Shaft	80	1	06	Steam	10 ft. fan	Long wall								
Mine No. 7	Drift		1	06	Electricity	Furnace	Long wall								
Gann & Bledsoe	Drift		1	02	Hand		Long wall			5	3	2	1	7	4
Hohenwald Bros.	Shaft	30	1	08	Hand	Furnace	Long wall			4	1			4	1
Independence Coal M'g Co.	Shaft	47	1	06	Hand	5 ft. fan	Long wall			20	15	5	3	25	18
Kratz & Son	Shaft	16	1	06	Horse	Natural	Long wall			4	1			4	1
Labor Exchange No. 305	Shaft	76	1	09	Steam	5 ft. fan	Long wall			45	45	6	6	51	51
Lanning-Harris C. & G. Co.	Drift		1	06	Electricity	12 ft. fan	Long wall			80	10	40	4	120	14
Looney Mine	Shaft	72	1	06	Steam	10 ft. fan	Long wall			20		4		24	
Martin, Jacob	Drift		1	06	Hand		Pillar and room			2				2	
McGrew Coal Co.	Drift		1	10	Electricity	10 ft. fan	Long wall			150	60	100	30	250	90
Perry Bros.	Shaft	30	1	06	Horse	Furnace	Long wall			3	2			3	2
Plattenburg Coal Co	Drift		1	07	Hand	Furnace	Long wall			15	12			15	12
Pointer, C. S.	Drift		1	06	Hand	Natural	Long wall			4	2	1	1	5	3
Rust, W. C.	Slope		2		Hand	Natural	Long wall			2	2			2	2
Sipe, C. C.	Shaft	26	1	06	Horse	Furnace	Long wall			10	10			10	10
Stolin, Antone	Shaft	42	1	08	Horse	Furnace	Long wall			7	2			7	2
Stoll Bros.	Slope		1	08	Horse	Furnace	Pillar and room			6	2			6	2
Summers, M. W.	Drift		2		Hand	Natural	Long wall			4	2			4	2
Tyler, W.	Shaft	25	1	08	Horse	Natural	Pillar and room			4				4	
Van Gilder, E. M.	Drift		1	10	Horse	Furnace	Long wall			21			5	21	5
Waverly Brick & Coal Co.	Shaft	135	4		Steam	Fan	Pillar and room	120	$240	15		5		20	
Waverly Coal Co	Shaft	115	3	10	Steam	10 ft. fan	Pillar and room	700	1,400	30	10	15	8	45	18
Western C. & M. Co.:															
Glen Oak Mine	Shaft	42	1	08	Steam	10 ft. fan	Long wall			45		15		60	
Valley Mine	Shaft	87	1	08	Steam	12 ft. fan	Long wall			118	118	66	66	184	184
Midway Mine	Shaft	140	1	08	Steam	12 ft. fan	Long wall			135	135	91	91	226	226
Summit Mine	Shaft	160	1	08	Steam	12 ft. fan	Long wall			133	120	76	76	209	196
Seawell Mine	Drift		1	08	Horse	Furnace	Long wall			40	40	6	6	46	46
South Mine	Shaft	180	1	08	Steam	12 ft. fan	Long wall			54	50	33	23	87	73
Wright, J. J.	Drift		1	04	Hand	Furnace	Long wall			1	1			1	1
Wright, Samuel	Shaft	25	1	06	Hand	Furnace	Long wall			5	2	1	1	6	3

LEWIS COUNTY.

Name of company or person operating.	Kind of mine opening.	Depth of shaft	Thickness of seam. Feet	Thickness of seam. Inches	Power.	How ventilated.	Plan of working.	Powder. Kegs consumed	Powder. Cost to miners	Employes—men engaged at mines. Miners. Winter	Employes—men engaged at mines. Miners. Summer	Employes—men engaged at mines. Other help. Winter	Employes—men engaged at mines. Other help. Summer	Total No. employes. Winter	Total No. employes. Summer
Monticello C. & M'g Co.	Strip pit		3							3				3	

LINN COUNTY.

Name of company or person operating.	Kind of mine opening.	Depth of shaft	Thickness of seam. Feet	Thickness of seam. Inches	Power.	How ventilated.	Plan of working.	Powder. Kegs consumed	Powder. Cost to miners	Employes—men engaged at mines. Miners. Winter	Employes—men engaged at mines. Miners. Summer	Employes—men engaged at mines. Other help. Winter	Employes—men engaged at mines. Other help. Summer	Total No. employes. Winter	Total No. employes. Summer
Barr Mine	Shaft	130	2	02	Horse	Furnace	Long wall			16	7	2	1	18	8
Bucklin C. & M'g Co.	Shaft	227	2	06	Steam	6 ft. fan	Long wall	46	$.92	4		2		6	
Crandall Coal Co.	Shaft	140	2	02	Horse	Furnace	Long wall			15	4	2	1	17	5
Landreth Coal Co.	Shaft	130	2	04	Steam	10 ft. fan	Long wall			25	6	5	3	30	9
Marceline C. & M'g Co. No. 1	Shaft	190	2	03	Steam	14 ft. fan	Long wall	600	1,200	230	230	74	74	304	304
Marceline C. & M'g Co. No. 2	Shaft	210	3	02											
Sheehan, J. E.	Shaft	155	2		Horse	Furnace	Long wall			15	2	2	2	17	4
Wine, H. F.	Shaft	150	2	05	Horse	Natural	Long wall			5	5	2	2	7	7

LIVINGSTON COUNTY.

Name of company or person operating.	Kind of mine opening.	Depth of shaft	Thickness of seam. Feet	Thickness of seam. Inches	Power.	How ventilated.	Plan of working.	Powder. Kegs consumed	Powder. Cost to miners	Employes—men engaged at mines. Miners. Winter	Employes—men engaged at mines. Miners. Summer	Employes—men engaged at mines. Other help. Winter	Employes—men engaged at mines. Other help. Summer	Total No. employes. Winter	Total No. employes. Summer
Cox, J. O.	Shaft	80	1	08	Horse	Natural	Pillar and room			5		1		6	

MONROE COUNTY.

Name of company or person operating.	Kind of mine opening.	Depth of shaft	Thickness of seam. Feet	Thickness of seam. Inches	Power.	How ventilated.	Plan of working.	Powder. Kegs consumed	Powder. Cost to miners	Employes—men engaged at mines. Miners. Winter	Employes—men engaged at mines. Miners. Summer	Employes—men engaged at mines. Other help. Winter	Employes—men engaged at mines. Other help. Summer	Total No. employes. Winter	Total No. employes. Summer
Gilbert, J. B.	Shaft	30	1	08	Horse	Natural	Pillar and room	2	$4	4	4			4	4

MONTGOMERY COUNTY.

Name of company or person operating.	Kind of mine opening.	Depth of shaft	Thickness of seam. Feet	Thickness of seam. Inches	Power.	How ventilated.	Plan of working.	Powder. Kegs consumed	Powder. Cost to miners	Employes—men engaged at mines. Miners. Winter	Employes—men engaged at mines. Miners. Summer	Employes—men engaged at mines. Other help. Winter	Employes—men engaged at mines. Other help. Summer	Total No. employes. Winter	Total No. employes. Summer
Noel, Buford	Slope		2	06	Hand	Furnace	Long wall			5	2	2		7	2
Whitehead, H. & Son	Slope		2	06	Hand	Natural	Long wall	6	$13	7	3			7	3

MORGAN COUNTY,

Name of company or person operating.	Kind of mine opening	Depth of shaft	Thickness of seam. Feet	Thickness of seam. Inches	Power.	How ventilated.	Plan of working.	Powder. Kegs consumed	Powder. Cost to miners.	Employes—men engaged at mines. Miners. Winter	Miners. Summer	Other help. Winter	Other help. Summer	Total No. employes. Winter	Total No. employes. Summer
Ouachita Coal & Clay Co.	Shaft	120	6	....	Steam	2 ft. fan	Pillar and room	143	....	5	5	3	3	8	8

MACON COUNTY.

Name of company or person operating.	Kind of mine opening	Depth of shaft	Thickness of seam. Feet	Thickness of seam. Inches	Power.	How ventilated.	Plan of working.	Powder. Kegs consumed	Powder. Cost to miners.	Employes—men engaged at mines. Miners. Winter	Miners. Summer	Other help. Winter	Other help. Summer	Total No. employes. Winter	Total No. employes. Summer
Central Coal & Coke Co. No. 10	Shaft	137	4	....	Steam	10 ft. fan	Pillar and room	660	$1,320	43	34	29	42	72	76
Central Coal & Coke Co. No. 24	Shaft	121	5	....	Steam	14 ft. fan	Pillar and room	1,250	2,500	160	160	83	83	243	243
Central Coal & Coke Co. No. 25	Slope	....	4	05	Steam	10 ft. fan	Pillar and room	5,429	10,858	146	146	65	65	211	211
Central Coal & Coke Co. No. 28	Shaft	79	3	06	Steam	12 ft. fan	Pillar and room	4,981	9,962	114	111	46	53	160	164
Central Coal & Coke Co. No. 61	Shaft	124	4	....	Steam	15 ft. fan	Pillar and room	6,867	13,734	246	236	125	87	371	323
Central Coal & Coke Co. No. 66	Shaft	59	4	05	Steam	12 ft fan	Pillar and room	5,750	11,500	152	152	79	79	231	231
Dennis, J. H.	Shaft	60	2	....	Horse	Furnace	Long wall	28	52	5	5	2	2	7	7
Gates, J. N	Slope	....	4	06	Hand	Natural	Pillar and room	70	140	6	....	....	....	6	....
Gronoway, D	Slope	....	1	10	....	....	Long wal	5	10	5	2	....	....	5	2
Helmet Mining Co.	Shaft	130	3	06	Steam	12 ft. fan	Long wall	40	80	55	....	13	....	38	....
Hurd & Hurd	Shaft	90	3	....	Horse	Furnace	Long wall	....	....	18	10	3	3	21	13
Isaacson & Underwood	Shaft	65	4	08	Steam	3 ft. fan	Pillar and room	50	100	4	....	1	....	5	....
James Bros.	Shaft	54	4	06	Horse	Furnace	Pillar and room	100	200	10	5	2	2	12	7
Jones, Jno. H.	Shaft	107	4	03	Horse	Furnace	Pillar and room	100	200	5	3	2	2	7	5
Lunsford, H. & A. G.	Drift	....	1	06	Hand	Natural	Pillar and room	....	....	3	....	....	....	3	....
Northwest'n C. & M. Co. No. 8	Shaft	140	4	06	Steam	14 ft fan	Pillar and room	5,357	10,714	260	260	80	80	340	340
Northwest'n C. & M. Co. No. 9	Shaft	100	4	06	Steam	14 ft. fan	Pillar and room	6,855	13,710	250	200	55	55	305	255
Smith & Hall	Shaft	80	3	....	Horse	Natural	Pillar and room	70	129	6	2	1	1	7	3
Vestal & Wyatt	Slope	....	5	....	Horse	Furnace	Pillar and room	20	40	3	....	....	....	3	....

PLATTE COUNTY

Name of company or person operating.	Kind of mine opening	Depth of shaft	Thickness of seam. Feet	Thickness of seam. Inches	Power.	How ventilated.	Plan of working.	Powder. Kegs consumed	Powder. Cost to miners.	Employes—men engaged at mines. Miners. Winter	Miners. Summer	Other help. Winter	Other help. Summer	Total No. employes. Winter	Total No. employes. Summer
Home Riverside Coal Co.	Shaft	700	1	10	Steam	25 ft. fan	Long wall	....	....	508	349	172	113	680	462

PUTNAM COUNTY.

Name of company or person operating.	Kind of mine opening.	Depth of shaft	Thickness of seam. Feet	Thickness of seam. Inches	Power.	How ventilated.	Plan of working.	Powder. Kegs consumed	Powder. Cost to miners.	Employes—men engaged at mines. Miners. Winter	Employes—men engaged at mines. Miners. Summer	Employes—men engaged at mines. Other help. Winter	Employes—men engaged at mines. Other help. Summer	Total No. employes. Winter	Total No. employes. Summer
Baugher, A. W.	Drift		3		Hand	Natural	Pillar and room			2				2	
Blackbird-Block C. Co.	Slope		2	08	Gasoline	Furnace	Pillar and room			35	25	10	7	45	32
Humphrey, Richard	Drift		3		Hand	Natural	Pillar and room			3				3	
Jones, Geo. F	Slope		2	06	Horse	Natural	Pillar and room			4				4	
Means, J. R.	Shaft	84	2	10	Steam	4 ft. fan	Pillar and room			6	4	3	1	9	5
Moore Coal Co.	Drift		3	02	Hand	Natural	Pillar and room			4				4	
Mendota Coal Co. No. 2	Shaft	67	2	10	Steam	12 ft. fan	P. & R.-L. W.			40	40	16	13	56	53
Mendota Coal Co. No. 9	Drift		2	10	Horse	Furnace	P. & R.-L. W.			34	30	9	10	43	40
Medlin Coal Co. No. 7	Slope		2	10	Horse	Furnace	P. & R.-L. W.			18	18	4	4	22	22
Mo. M'g, Mfg. & Merc. Co.	Slope		2	08	Gasoline	Furnace	Pillar and room			35	25	10	7	45	32
Robbins, J. A.	Slope		3	06	Horse	Furnace	Pillar and room			6		2		8	
Rogers Coal Co.	Drift		2	10	Horse	Furnace	P. & R.-L. W.	2		27	20	6	6	33	26
Seavey, J. E.	Slope		3	02	Horse	Natural	Pillar and room			3	1	2		5	1
Stevens, A.	Drift		3	04	Hand	Natural	Pillar and room			3	1			3	1
Shelton, Elmer	Shaft	20	3		Horse	Natural	Pillar and room			4	2	2	1	6	3

RANDOLPH COUNTY

Name of company or person operating.	Kind of mine opening.	Depth of shaft	Thickness of seam. Feet	Thickness of seam. Inches	Power.	How ventilated.	Plan of working.	Powder. Kegs consumed	Powder. Cost to miners.	Employes—men engaged at mines. Miners. Winter	Employes—men engaged at mines. Miners. Summer	Employes—men engaged at mines. Other help. Winter	Employes—men engaged at mines. Other help. Summer	Total No. employes. Winter	Total No. employes. Summer
Bowden, John	Drift		4		Hand	Furnace	Pillar and room	15	$25	3				3	
Butler, C. W.	Drift		4	06	Horse	Natural	Pillar and room	15	25	6	2	1	1	7	3
Clark, D. E.	Drift		4		Horse	Furnace	Pillar and room	100	200	3	3	1	1	4	4
Eravi, Jas.	Slope		4	02	Hand	Furnace	Pillar and room	40	68	2	2			2	2
Griffin, Chas.	Drift		4		Horse	Furnace	Pillar and room	25	50	10	10	1	1	11	11
Hardy, Wm.	Shaft	50	4	06	Horse	Furnace	Pillar and room	70	122	4	2			4	2
McCronan, J M.	Drift		4		Horse	Furnace	Pillar and room	120	240	5	3	1	1	6	4
McKiernan, W. H.	Drift		4		Horse	Furnace	Pillar and room	376	752	8	8	1	1	9	9
McCune, J. H.	Slope		4		Horse	Furnace	Pillar and room	6	12	3		1		4	
Milburn Bros.	Shaft	57	4	06	Horse	Furnace	Pillar and room	50	87	5				5	
Morris, Geo.	Drift		4	06	Hand	Natural	Pillar and room			2				2	
Orris Coal Co.	Shaft	95	3	08	Steam	10 ft. fan	Pillar and room	461	922	18	18	7	7	25	25
Pilkington, John	Slope		4	06	Hand	Natural	Pillar and room	25	42	2	2			2	2
Sneed & Snow	Slope		4	06	Horse	Natural	Pillar and room	100	175	6				6	

RALLS COUNTY.

Name of company or person operating.	Kind of mine opening.	Depth of shaft	Thickness of seam.		Power.	How ventilated.	Plan of working.	Powder.		Employes—men engaged at mines.				Total No. employes.	
			Feet	Inches				Kegs consumed	Cost to miners.	Miners. Winter	Miners. Summer	Other help. Winter	Other help. Summer	Winter	Summer
Barger, John	Slope		2	04	Hand	Natural	Long wall			2				2	
Clark Coal Co.	Shaft	60	2	02	Horse	6 ft. fan	Long wall			14	14	3	2	17	16
Jackson, Chas.	Slope		2	04	Horse	Natural	Pillar and room			3	1			3	1
Peer, H. M.	Slope		2	02	Hand	Natural	Long wall			1	1			1	1
Ralls County Coal Co.	Shaft	50	2	03	Horse	7 ft. fan	Long wall			15	15	3	3	18	18
Smith, Henry	Drift		2	02	Hand	Furnace	Long wall			4	1			4	1
Tighe M'g Co.	Shaft	60	2	03	Horse	Furnace	Long wall	2	$4	16		3		19	

RAY COUNTY.

Name of company or person operating.	Kind of mine opening.	Depth of shaft	Feet	Inches	Power.	How ventilated.	Plan of working.	Kegs consumed	Cost to miners.	Miners. Winter	Miners. Summer	Other help. Winter	Other help. Summer	Total Winter	Total Summer
Anderson, C. C.	Shaft	65	1	06	Horse	Furnace	Long wall			3				3	
Bisbee, Wm.	Shaft	145	1	06	Steam	18 in. fan	Long wall			4				4	
Blair, Hugh	Shaft	200	2	02	Horse	42 in. fan	Long wall			5		1		6	
Blair Coal Co.	Shaft	60	2	04	Horse	Furnace	Long wall			10	4	3		13	4
Brockman, G. C. & A. B.	Shaft	30	1	06	Horse	Natural	Long wall			3				3	
Calnen- Blair C. Co	Shaft	120	2		Steam	8 ft. fan	Long wall			15	8	2	2	17	10
Central Coal & Coke Co. No. 50	Shaft	71	1	10	Steam	12 ft. fan	Long wall			60	60	55	55	115	115
Clark, Jacob	Shaft	40	2	02	Horse	2 ft. fan	Pillar and room			3		3		6	
Collier, J. W	Drift		1	05	Hand	Furnace	Long wall			5	2		2	5	4
Crawford-Wilson C. Co.	Shaft	108	2		Steam	10 ft. fan	Long wall			60	60	12	12	72	72
Crispin & Ward	Shaft	85	2		Horse	Furnace	Long wall			20	15	2	2	22	17
Daugherty, C. M	Drift		2	04	Hand	Furnace	Long wall			2	2			2	2
Doran, Jno	Drift		1	08	Hand	Natural	Long wall			4	2			4	2
Fowler C. & M. Co.	Shaft	73	2		Steam	12 ft. fan	Long wall			65		12	2	77	2
Gant, J. M.	Drift		1		Hand	Natural	Long wall			2				2	
Good & Turner	Shaft	65	1	10	Horse	Furnace	Long wall			8	2	9		17	2
Heisinger, Henry	Slope		1	06	Hand	Natural	Long wall			6	2			6	2
Huston, Fred	Drift		1	06	Hand	Furnace	Long wall			3				3	
Hughes, A.	Shaft	35	1	08	Horse	Furnace	Long wall			6		1		7	
Hymer, O. P.	Shaft	140	1	08	Steam	3 ft. fan	Long wall			3		1		4	
Johnson, L. E.	Drift		1	06	Hand	Furnace	Long wall			6	2			6	2
Loeven, M. J.	Drift		2		Hand	Furnace	Long wall			4				4	
Loven, Theo	Drift		2	02		Furnace	Long wall			15	4			15	4
Love, Jas.	Drift		1	06	Hand	Natural	Long wall			2				2	
Maple Hill C. & M. Co.	Shaft	90	1	06	Steam	10 ft. fan	Long wall			30	15	6	4	36	19

RAY COUNTY—Continued.

Name of company or person operating.	Kind of mine opening.	Depth of shaft.....	Thickness of seam.		Power.	How ventilated.	Plan of working.	Powder.		Employes—men engaged at mines.				Total No. employes.	
			Feet......	Inches.....				Kegs consumed	Cost to miners.	Miners. Winter..	Miners. Summer	Other help. Winter.	Other help. Summer	Winter......	Summer.....
Martin-Hubbell-Osborn Co.:															
Mine No. 3	Shaft	50	1	08	Steam	10 ft. fan	Long wall			40	40	12	12	52	52
Mine No. 7	Shaft	95	2		Steam	10 ft. fan	Long wall			60	60	15	15	75	75
Mine No. 10	Shaft	110	2		Steam	Furnace	Long wall			25		10		35	
Mine No. 22	Shaft	90	2		Steam	10 ft. fan	Long wall			35		25		60	
Mercantile C. & M. Co.	Shaft	193	2		Steam	10 ft. fan	Long wall			80	24	10	6	90	30
McCorkendale, J. J.	Shaft	60	1	08	Horse	Furnace	Long wall			6	2	2	1	8	3
McDaniel, J. L.	Shaft	32	2	02	Horse	Natural	Long wall			12	2	1		13	2
Ottman & Nelson	Shaft	65	2	01	Horse	Furnace	Long wall			7	2	2	1	9	3
Pence & Co.	Shaft	85	1	10	Steam	Furnace	Long wall			40	30	10	8	50	38
Pence & Calnen	Shaft	90	2		Steam	8 ft. fan	Long wall			30	30	2	2	32	32
Pickering Coal Co. No. 4	Shaft	46	2		Steam	10 ft. fan	Long wall			158	158	158	158	316	316
Pickering Coal Co. No. 9	Shaft	105													
Pickering Coal Co. No. 11	Shaft	107													
Ray County Coal Co.	Shaft	60	2		Steam	Steam jet	Long wall			6	6	1	1	7	7
Richmond & Camden C. Co. Mines Nos. 1-2-4-12 & 14	Shafts	85	1	10	Steam	10 ft. fans	Long wall			145	145	30	30	175	175
Rice, Perry	Shaft	100	2		Horse	Furnace	Long wall			12	3			12	3
Shea, Thos.	Shaft	50	1	10	Horse	Furnace	Long wall			4	2	3	1	7	3
Schooler & Bates	Shaft	400	2	02	Steam	Steam jet	Long wall			5	5	2	2	7	7
Thompson, G. W	Shaft	84	2	04	Horse	Furnace	Long wall			3		1		4	
Watson, J. N.	Shaft	85	2		Horse	Furnace	Long wall			2		1		3	
Whitmer C. & M. Co.	Shaft	40	2	01	Horse	Furnace	Long wall			10		4		14	
Woodruff, Jno.	Drift		1	10	Hand	Natural	Long wall			3	2			3	2

ST. CLAIR COUNTY.

Name of company or person operating.	Kind of mine opening.	Depth of shaft	Feet	Inches	Power	How ventilated	Plan of working	Kegs consumed	Cost to miners	Miners Winter	Miners Summer	Other help Winter	Other help Summer	Total Winter	Total Summer
Cook, Jas. M.	Strip pit		2				Long wall			2				2	
Griggs, L. I.	Slope		2			Natural	Pillar and room			4	2			4	2
Hunt, ~~Chas~~.	Slope		4	08	Hand	Natural	Pillar and room			2				2	
Wooden, H. N	Slope		2	10	Hand	Natural	Pillar and room	5	$8		1		1		2

SCHUYLER COUNTY.

Name of company or person operating.	Kind of mine opening.	Depth of shaft......	Thickness of seam.		Power.	How ventilated.	Plan of working.	Powder.		Employes—men engaged at mines.				Total No. employes.	
			Feet......	Inches.....				Kegs consumed	Cost to miners.	Miners. Winter.	Miners. Summer	Other help. Winter.	Other help. Summer	Winter......	Summer.....
Blansett, B. F.	Slope		3	08	Horse	Furnace	Pillar and room.			2				2	
Golston, Ira	Shaft	65	3	08	Horse	Natural	Pillar and room.	1							
Grindle & Mock	Drift		3	08	Hand	Natural	Pillar and room.			1				1	
Hymes, J. W.	Drift		3	02	Hand	Natural	Pillar and room.								
Long, G. B.	Drift		3	08	Hand	Natural	Pillar and room.			12	1			13	

SALINE COUNTY.

Name of company or person operating.	Kind of mine opening.	Depth of shaft.	Feet.	Inches.	Power.	How ventilated.	Plan of working.	Kegs consumed	Cost to miners.	Miners. Winter.	Miners. Summer	Other help. Winter.	Other help. Summer	Total Winter.	Total Summer.
Garver, J. N.	Shaft	34	2		Horse	Natural	Pillar and room.	4	$8	4					4

VERNON COUNTY.

Name of company or person operating.	Kind of mine opening.	Depth of shaft.	Feet.	Inches.	Power.	How ventilated.	Plan of working.	Kegs consumed	Cost to miners.	Miners. Winter.	Miners. Summer	Other help. Winter.	Other help. Summer	Total Winter.	Total Summer.
Brown, A. S.	Shaft	26	2	04	Horse	Natural	Pillar and room.			3				3	
Central C. & C. Co.	Shaft	178	5	02	Steam	16 ft. fan	Pillar and room.	2,342	$4,684	40	43	37	39	87	82
Ewing, W. H.	Strip pit		1												
Flake, J. W.	Strip pit		2			Natural		3	4						
Hill, W. L.	Shaft	20	2	06	Horse	Furnace	Pillar and room.	20	32	4				4	
Koch, Herman	Strip pit		1	02				10	17	3				3	

COAL MINES—REPORTS OF ACCIDENTS, 1908—FATAL.

Name of company or operator.	Name of injured person.	Date of accident.	Occupation of injured person.	Age.	Single.	Married.	Children.	Nature of accident.	Coroner's verdict.	County.
Northwestern C. & M. Co.	Williams, R. W.	July 21.	Miner	31		1	4	Fall of roof	Unavoidable accident	Macon.
Northwestern C. & M. Co.	Charfot, Joe	Aug. 5.	Miner	52		1	2	Fall of roof	No inquest	Macon.
Rombauer Coal Co.	Gorman, John	Sept. 2.	Miner	75		1	4	Fall of rock	No inquest	Adair.
Edw. Aull Coal Co.	Sherrow, Arthur	Sept. 21.	Miner	16	1			Fall of roof	No inquest	Lafayette.
Northwestern C. & M. Co.	Julius, Wilhelm	Sept. 22.	Driver	20	1			Caught by mine car	No inquest	Macon.
Durham, Dan	Kitchen, Victor	Nov. 12.	Miner	21	1			Fall of roof	No inquest	Randolph.
McCullough Mine	Andrews, Conrad	Nov. 12.	Miner	35		1	3	Fall of roof	Verdict not reported	Randolph.
Mitts, Roy E.	Mitts, Roy E.	Nov. 12.	Farmer	21	1			Fall of roof	No inquest	Bates.
Central C. & C. Co.	Nizzi, John	Dec. 15.	Miner	28	1			Fall of roof	No inquest	Macon.
Northwestern C. & M. Co.	Florenzi, Felici	Dec. 28.	Miner	32	1			Fall of roof	Accidental	Macon.

COAL MINES—REPORTS OF ACCIDENTS, 1908—NON-FATAL.

Name of company or operator.	Name of injured person.	Date of accident.	Occupation of injured person.	Age.	Single.	Married.	Children.	Nature of accident.	County.
McGrew, No. 1	McCorkindale, R. F	Jan. 8.	Miner	33		1	3	Fall of roof slate	Lafayette.
Central Coal & Coke Co.	Gallimore, W. D.	Jan. 10.	Cager	40		1	5	Struck by car	Vernon.
Central C. & C. Co	Baily, Lucas	Feb. 17.	Miner	22	1			Hurt by cage	Macon.
Marceline C. & M. Co.	Tolley, J. C	Mar. 4.	Miner	48	W			Fall of roof	Linn.
Richmond-Camden C. Co	King, Wm. J	Mar. 9.	Wheeler					Hurt by mine car	Ray.
Jones Coal Co	Burns, W. C	Mar. 18.	Weighman	29		1	3	Fell into shaft	Bates.
Marceline C. & M. Co.	Bremtin, Ed	Mar. 24.	Cager	45		1		Fall of rock from car	Linn.
Pickering Coal Co.	Smith, C. L	June 4.	Miner	56				Fall of roof	Ray.
Central C. & C. Co	Colman, Bud	June 13.	Driver	29	1			Hurt by mine car	Macon.

COAL MINES—REPORTS OF ACCIDENTS, 1908—NON-FATAL—Continued.

Name of company or operator.	Name of injured person.	Date of accident.	Occupation of injured person.	Age	Single	Married	Children	Nature of accident.	County.
Richmond-Camden C. Co	Solomon, Geo	June 19	Miner	68		1	5	Fall of rock	Ray.
Marceline C. & M. Co	Meyers, Joe	June 26	Roadman	45		1	1	Struck by rock	Linn.
Marceline C. & M. Co	Spolen, Mart	June 27	Miner	40	1			Fall of roof	Linn.
Central C. & C. Co	Lawson, Chas	July 5	Waterman	29		1		Fall of roof	Macon.
Marceline C. & M. Co	McMillin, Henry	July 10	Miner	45		1		Fall in room	Linn.
Marceline C. & M. Co	McCready, P. M	July 10	Miner	60		1		Fall of roof	Linn.
Marceline C. & M. Co	Lower, Ollie	July 10	Miner			1		Fall of roof	Linn.
Marceline C. & M. Co	Abba, August	July 13	Miner	40		1		Fall of roof	Linn.
Marceline C. & M. Co	Sargent, Jack	July 13	Miner	35		1		Fall of roof	Linn.
Marceline C. & M. Co	Walton, Jas	July 13	Miner					Fall of roof	Linn.
Central C. & C. Co	Berncco, Gocomo	July 13	Miner	27				Fall of roof	Macon.
Central C. & C. Co	Davis, Geo	July 2	Miner	26				Fall of roof	Macon.
Northwestern C. & M. Co	Overby, Jos	July 28	Timberman	38		1		Fall of roof	Macon.
Central C. & C. Co	Henry, J. W	Aug. 11	Miner	27				Fall of roof	Macon.
Central C. & C. Co	Prince, Tim	Aug. 13	Driver	24	1			Hurt by mine car	Macon.
Farmers Coal Co	Schellinger, Joe	Aug. 13	Machine shoveler	60		1		Fall of roof	Lafayette.
Marceline C. & M. Co	Hardin, Clark	Aug. 18	Miner					Fall of roof	Linn.
Rombauer Coal Co	Ross, Geo	Aug. 18	Driver	21	1			Caught by trip	Adair.
Marceline C. & M. Co	Sneider, J. F	Aug. 20	Supt. and foreman					Fall of roof	Linn.
Pickering Coal Co	West, J. H	Aug. 21	Driver	19				Hurt by mine car	Ray.
Star Coal Co	Wilson, Harry	Aug. 25	Miner	30		1	2	Fall of material in shaft	Adair.
Diamond Coal Co	Busby, Montie	Aug. 29	Miner	18				Fall of coal	Lafayette.
Ivie, J. M. & Sons	Raphel, Lewis	Sept. 4	Miner	46	W			Hurt by cage	Adair.
Kierstead Coal Co	Leach, Alex	Sept. 16	Miner	17				Fall of roof	Lafayette.
Pickering Coal Co	Conner, William	Sept. 30	Miner	38		1	5	Fall of coal	Ray.
Martin-Hubbell-Osborn Coal Co	Tarwater, James M	Oct. 29	Miner	28	1			Fall of roof	Ray.
Central C. & C. Co	Teracona, Barney	Dec. 14	Miner	35		1	1	Fall of roof	Macon.
Fulton Coal Co	Ritter, Nicholas H	Dec. 31	Pit boss	40		1		Fall of coal	Callaway.

STATISTICAL.

LEAD AND ZINC.

ST. FRANCOIS COUNTY.

Operators.	Capitalization.	Acres land owned or leased.	No. shafts operated.	Average depth of shaft.	Lead ore.		Total value.
					Tons.	Value.	
Desloge Consolidated Lead Co.	$1,000,000	4,153	2	300	14,446	$606,753	$606,753
Doe Run Lead Co.	10,000,000	4,800	6	420	27,315	1,229,765	1,229,765
Federal Lead Co.	2,000,000	14,000	5	417	29,326	1,837,887	1,837,887
St. Joseph Lead Co.	20,000,000	19,000	8	350	38,892	1,700,000	1,700,000
St. Louis Smelting and Refining Co.	2,000,000	1,295	4	366	20,004	833,240	833,240
Totals	$35,000,000	43,248	25	370	129,983	$6,207,645	$6,207,645

ST. FRANCOIS COUNTY—Continued.

Operators.	Employes			Total employes.	Av. daily wage.	No. days worked.	No. of plants.	No. of boilers.	No. of engines.	No. of pumps.	No. air compressors	No. steam hoisters.	No. of crushers.	No. of drills.	No. shaking tables.	Daily mill capacity—tons.
	Miners.	Other employes.	No. prospectors.													
Desloge Consolidated Lead Co.	253	198	2	453	*$1.72	305	1	6	2	4	2	2	3	25	2	1,000
Doe Run Lead Co.	610	817	....	1,427	170	303	2	34	16	25	8	8	5	62	36	1,500
Federal Lead Co.	488	520	40	1,048	198	313	2	36	9	11	9	5	21	90	116	3,700
St. Joseph Lead Co.	1,097	433	16	1,546	170	311	2	38	22	20	18	10	6	100	50	3,250
St. Louis Smelting and Refining Co.	385	370	30	785	176	307	1	8	5	12	2	4	6	40	96	1,500
Totals	2,833	2,338	88	5,259	......	....	8	122	54	72	39	29	41	317	300	10,950

*Wage of prospectors disregarded.

MADISON COUNTY.

Operators.	Capitalizati'n	Acres land owned or leased.	No. shafts	Copper ore.		Cobalt oxide.		Nickel metallic.		Lead ore.		Total value all minerals.
				Lbs. ingots.	Value.	Lbs.	Value.	Lbs.	Value.	Tons.	Value.	
Eastern Lead Co.	$600,000	413	1	....	....	......	....	......	....	392.94	$15,762	$15,762
Madison Lead & Land Co.	600,000	1,580	2	....	....	......	....	......	....	2,997.82	148,859	148,859
Mine La Motte L. & S. Co.	3,000,000	....	3	....	....	......	....	......	....	7,619.20	209,764	209,764
North American Lead Co.	2,000,000	800	.....	1,100,000	$145,000	51,000	$75,000	83,000	$35,000	1,000.00	45,000	300,000
Wheeling Tailing Mill	....	100	.....	....	....	......	....	......	....	490.50	23,666	23,666
Totals	$6,200,000	2,893	6	1,100,000	$145,000	51,000	$75,000	83,000	$35,000	12,500.46	$443,051	$698,051

MADISON COUNTY—Continued.

Operators.	Employes.			Total employes.	Av. daily wage.	No. days worked.	No. of plants.	No. of boilers.	No. of engines.	No. of pumps.	No. air compressors	No. steam hoisters.	No. of crushers.	No. of drills.	No. shaking tables.	Daily mill capacity—tons.
	Miners.	Other employes.	No men prospecting.													
Eastern Lead Co.	60	36	2	98	$1.79	71	1	2	3	5	2	3	1	9	6	250
Madison Lead and Land Co.	91	62	....	153	1.72	311	2	8	3	8	2	5	4	18	4	700
Mine La Motte L. & S. Co.	125	75	....	200	1.75	......	1	12	6	7	4	3	3	18	16	500
North American Lead Co.	300	......	....	300	1.75	300	2	8	4	28	.....	4	4	14	15	....
Wheeling Tailing Mill	40	23	....	63	1.75	......	1	5	3	4	1	3	3	8	8	350
Totals	616	196	2	814	......	......	7	35	19	52	9	18	15	67	49	1,800

WASHINGTON COUNTY.

Operators.	Capitalizat'n.	Acres of land owned or leased.	Shafts.	Average depth of shafts.	Baryta.		Lead ore.		Total value of all minerals.
					Tons.	Value.	Tons.	Value.	
Bugg Mercantile Co.		400	4	90			50¼	$2,814	$2,814
Higginbotham and Sons					456	$1,824	288¾	14,100	15,924
Long, Jas. (ore buyer)							900	45,000	45,000
Nina Realty Co.	$10,000	24,000			1,851	7,404			7,404
Renault Lead Co.	300,000	10,000					73½	3,576	3,576
Rose, C. C.					300	1,650	5	275	1,925
Southeast Missouri Lead Co.	200,000	3,031	6	35			150	7,500	7,500
Washington Land & Mining Co.	50,000	6,000			700	1,750	70	1,400	3,150
Miscellaneous reports.					9,962	40,273			40,273
Totals.	$710,000	47,631	10	62	13,269	$52,891	1,537½	$74,665	$127,586

FRANKLIN COUNTY.

Operators.	Capitalization.	Acres of land owned or leased.	Baryta.		Iron ore.		Lead ore.		Total value of all minerals.
			Tons.	Value.	Tons.	Value.	Tons.	Value.	
Rock Island Mining Co.	$30,000	203			9,000	$15,750			$15,750
Miscellaneous reports.			360	$1,890			85	$4,275	6,165
Totals.									$21,915

JEFFERSON COUNTY.

Operators.	Capitalization.	Acres of land owned or leased.	Shafts.	Average depth of shaft.	Zinc.		Lead ore.		Total value of all minerals.
					Tons.	Value.	Tons.	Value.	
Valle Mining Co.	$200,000	5,082	10	150	1,318	$10,550	111	$4,270	$14,820
Miscellaneous reports.	....	....	....	....	116	5,946	822	17,622	23,568
Totals	....	....	....	....	1,434	$16,496	933	$21,892	$38,388

CRAWFORD COUNTY.

Operators.	Capitalization.	Acres of land owned or leased.	Shafts.	Average depth of shaft.	Iron ore.		Total value of all minerals.
					Tons.	Value.	
Missouri Copper Mountain Mining Co.	$1,500,000	7,000	2	85	250	$625	$625
Miscellaneous reports.	....	....	....	....	36,614	91,535	91,535
Totals	....	....	....	....	36,864	$92,160	$92,160

MISCELLANEOUS REPORTS.

	Zinc.		Baryta.		Iron.		Lead.		Total value of all minerals.
	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value	
Butler county					2,661	$5,987			$5,987
Cole county			2,024	$7,084			5	$250	7,334
Dade county	40	$800							800
Howell county					6,390	9,585			9,585
Moniteau county	120	3,600					15	750	4,350
Phelps county					7,655	15,300			15,300
St. Francois county					8,300	20,000			20,000
Stoddard county					485	776			776
Wayne county	2,040	40,800			13,728	25,128			65,928

LEAD AND ZINC—EASTERN DISTRICT—REPORTS OF ACCIDENTS, 1908.

FATAL.

Name of Co. or operator.	Name of injured person.	Date of accident.	Occupation of injured person.	Age	Single	Married	Children	Amount of insurance.	Nature of accident.	Coroners' verdict.	County.
St. Louis Smelt. & Ref. Co.	Buxton, Henry	Jan. 21	Driller	39		1	3	$1,000	Caught in effort to fire too many shots		St. Francois.
Desloge Con. Lead Co	Hammock, Walter	Jan. 28	Blaster	26		1	2		Returned on shot	Accident of own accord	St. Francois.
Cherry Valley Iron Mines	Becker, F. A	Mar. 31	Miner	46		1	5		Returned too soon after shot (foul air.)	Accident	Crawford.
Cherry Valley Iron Mines	Becker, Otto	Mar. 31	Miner	40		1	6		Returned too soon after shot (foul air)	Accident	Crawford.
Federal Lead Co., No. 4	Smith, Frank	April 22	Shoveler			1			Fall of rock	No inquest	St. Francois.
Federal Lead Co., No. 4	Patridge, Mike	April 22	Shoveler			1	3		Fall of rock	No inquest	St. Francois.
Doe Run Lead Co	Childers, Albert	May 27	Miner	42		1	3		Fall of rock	Unavoidable accident	St. Francois.
St. Louis Smelt. & Ref. Co	Gibson, Jno	Aug. 25	Back hand	18	1				Drilled into old shot		St. Francois.
Doe Run Lead Co	Counts, R	Aug. 29	Driller	22	1				Drilled into old shot	Explosion of shot	St. Francois.
Doe Run Lead Co	Puckett, Dan	Aug. 29	Pumpman	39		1	3		Drilled into old shot	Explosion of shot	St. Francois.
St. Joseph Lead Co., No. 4	Eaton, Chas	Sept. 4	Driller	26		1			Drilled into old shot	Explosion of shot	St. Francois.
Federal Lead Co	Casebolt, John	Nov. 2	Miner	40		1			Leaned over cage	Skull crushed by timber	St. Francois.
Doe Run Lead Co., No. 1	Austin, Ira	Nov. 30	Cager	25	1				Caught by cage	Cage came down on him	St. Francois.

NON-FATAL.

Name of company or operator.	Name of injured person.	Date of accident.	Occupation of injured person.	Age	Single	Married	Children	Nature of accident.	County.
Desloge Con. Lead Co	Buchanan, Frank	Mar. 18	Blaster	26		1	1	Premature explosion.	St. Francois.
St. Joseph Lead Co., No. 14	Forshee, Ed	Sept. 4	Drillman	28		1	1	Drilled into old shot	St. Francois.

LAWRENCE COUNTY.

Name of land owner.	Name of holder of first lease.	Capitalization.	Acres of land owned or leased.	Tons of zinc mined.		Prices received for		Receipts from sale of zinc ores.	Tons of lead mined.	Prices rec'd. for lead ore, per ton	Receipts from sale of lead ores.	Total amounts received for lead and zinc ores.
				Zinc.	Silicate.	Zinc, pr. ton	Silicte, pr. ton					
Boston-Aurora Z. Co.		$1,040,000	80	291.52		$48.55		$14,143				$14,143
Buddike Estate	Stone & Ripper		10		53.00		$16.98	900				900
Cleveland-Aurora		500,000	109	824.33	144.26	26.69	18.55	24,679	15.25	$48.52	$739	25,418
Decatur L. & Z. Co	Griffith & Co.	50,000	40		228.69		17.00	3,868	4.33	50.00	213	4,081
Federal Z. & L. Co.		60,000	20	662.25		35.35		23,410				23,410
Jones, E. C.	Mo. Hydraulic M. Co.	50,000	20	509.00	302.20	29.30	20.37	21,071	5.05	45.80	231	21,302
Kentucky M. Co.		10,000	20						5.80	50.67	294	294
Milton M. Co.		25,000		27.16	908.50	21.47	19.50	18,299	27.59	46.20	1,275	19,574
Ronegh & Fisher	Scott-Coleman & Co.		20	638.19		29.34		18,724				18,724
Robberson, Mrs. E. J.	Coleman, M. L., J. W. & U. L.		290	1,446.93		34.82		50,384				50,384
Scott-Coleman & Co	Qualls & Co.			100.00		30.00		3,000				3,000
Sphalerite M. Co				142.60	26.74	34.28	17.00	5,343	.20	54.00	11	5,354
United Zinc Co.					410.00		18.05	74	9.18	39.52	363	437
				4,641.98	2,073.39	$32.20	$18.20	$183,895	67.40	$47.81	$3,126	$187,021

GREENE COUNTY.

Reitz, J.	Badger L. & Z. Co.	$12,500		1,048.16		$40.68		$42,645	77.73	$55.95	$4,349	$46,994
Daisy M. & M. Co.	W. Morton Jones			702.97		40.50		28,477	109.59	55.10	6,039	34,516
				1,751.13		$40.59		$71,122	187.32	$55.52	$10,388	$81,510

pany.	Acres of land owned or leased.	Capitalization.	Tons of zinc mined.		Prices received for		Receipts from sale of zinc ore.	Tons of lead mined.		Prices received for		Receipts from sale of lead ores.	Total amounts received for lead and zinc ores.
			Zinc.	Silicate.	Zinc, per ton.	Silicate, per ton.		Lead.	Dry-Bone.	Lead ore per ton.	Dry-bone, per ton.		
			193.91		$27.06		$5,248	9.29		$50.00		$465	$5,704
	40							2.70		41.31		112	112
			28.62		30.20		864	1.34		46.00		62	926
			153.66		35.25		5,418	4.45		43.27		193	5,611
			54.35		31.04		1,687	80.62		50.86		4,101	5,788
			76.82		30.61		2,353	23.36		52.30		1,221	3,574
			20.00		30.67		614	7.80		42.15		329	943
	540		4,198.50		33.37		139,840	558.75		51.48		28,770	168,610
			76.12		38.14		2,904	1.20		50.00		60	2,964
			1,552.00		30.87		47,917	18.56		46.53		864	48,781
			944.74		36.16		34,166	177.46		60.75		10,782	44,948
			96.94		32.08		3,110	16.86		51.00		860	3,970
								35.38		48.00		1,698	1,698
		$500,000	2,027.00		35.82		72,616						72,616
			956.50		36.25		34,681	299.15		48.46		14,497	49,178
			923.62		31.97		29,533	191.39		53.90		10,317	39,850
			264.76		31.64		8,378						8,378
	145	1,000,000	231.88		40.65		9,427						9,427
			314.36		27.29		8,580	64.40		53.63		3,454	12,034
			246.90		31.39		7,751	24.90		46.09		1,148	8,899
			68.60		35.54		2,438	4.60		49.97		230	2,668
			457.92		34.00		15,569	28.80		45.00		1,296	16,865
	75		92.78		32.00		2,969						2,969
			201.19		36.00		7,243						7,243
			1,269.74	351.08	34.16	$18.01	49,772	285.25		56.44		16,101	65,873
	80		235.08	7.11	40.79	14.64	9,693	79.00		49.90		3,942	13,635
								17.00		51.41		874	874
			5,162.70		41.46		21,407	117.60		55.00		6,474	27,881
			159.75		16.48		2,633	129.00		55.03		7,099	9,732
			10.00		32.30		323						323
			185.72		46.62		8,658						8,658

LAWRENCE COUNTY.

Name of land owner.	Name of holder of first lease.	Capitalization.	Acres of land owned or leased.	Tons of zinc mined.		Prices received for		Receipts from sale of zinc ores.	Tons of lead mined.	Prices rec'd. for lead ore, per ton	Receipts from sale of lead ores.	Total amounts received for lead and zinc ores.
				Zinc.	Silicate.	Zinc, pr. ton	Silicte, pr. ton					
Boston-Aurora Z. Co.	....	$1,040,000	80	291.52	....	$48.55	......	$14,143	....	.....	....	$14,143
Buddike Estate	Stone & Ripper	....	10	....	53.00	......	$16.98	900	....	.....	....	900
Cleveland-Aurora	....	500,000	109	824.33	144.26	26.69	18.55	24,679	15.25	$48.52	$739	25,418
Decatur L. & Z. Co.	Griffith & Co.	50,000	40	....	228.69	......	17.00	3,868	4.33	50.00	213	4,081
Federal Z. & L. Co.	....	60,000	20	662.25	....	35.35	......	23,410	....	.....	....	23,410
Jones, E. C.	Mo. Hydraulic M. Co.	50,000	20	509.00	302.20	29.30	20.37	21,071	5.05	45.80	231	21,302
Kentucky M. Co.	....	10,000	20	....	....	......	......	....	5.80	50.67	294	294
Milton M. Co.	....	25,000	....	27.16	908.50	21.47	19.50	18,299	27.59	46.20	1,275	19,574
Ronegh & Fisher	Scott-Coleman & Co.	....	20	638.19	....	29.34	......	18,724	....	.....	....	18,724
Robberson, Mrs. E. J.	Coleman, M. L., J. W. & U. L.	....	290	1,446.93	....	34.82	......	50,384	....	.....	....	50,384
Scott-Coleman & Co.	Qualls & Co.	....	....	100.00	....	30.00	......	3,000	....	.....	....	3,000
Sphalerite M. Co.	....	....	....	142.60	26.74	34.28	17.00	5,343	.20	54.00	11	5,354
United Zinc Co.	....	....	....	....	410.00	......	18.05	74	9.18	39.52	363	437
		....	....	4,641.98	2,073.39	$32.20	$18.20	$183,895	67.40	$47.81	$3,126	$187,021

GREENE COUNTY.

Reitz, J.	Badger L. & Z. Co.	$12,500	....	1,048.16	....	$40.68	......	$42,645	77.73	$55.95	$4,349	$46,994
Daisy M. & M. Co.	W. Morton Jones	....	....	702.97	....	40.50	......	28,477	109.59	55.10	6,039	34,516
		....	....	1,751.13	....	$40.59	......	$71,122	187.32	$55.52	$10,388	$81,510

pany.	Acres of land owned or leased.	Capitalization.	Tons of zinc mined.		Prices received for		Receipts from sale of zinc ore.	Tons of lead mined.		Prices received for		Receipts from sale of lead ores.	Total amounts received for lead and zinc ores.
			Zinc.	Silicate.	Zinc, per ton.	Silicate, per ton.		Lead.	Dry-Bone.	Lead ore per ton.	Dry-bone, per ton.		
			193.91		$27.06		$5,248	9.29		$50.00		$465	$5,704
	40							2.70		41.31		112	112
			28.62		30.20		864	1.34		46.00		62	926
			153.66		35.25		5,418	4.45		43.27		193	5,611
			54.35		31.04		1,687	80.62		50.86		4,101	5,788
			76.82		30.61		2,353	23.36		52.30		1,221	3,574
			20.00		30.67		614	7.80		42.15		329	943
	540		4,198.50		33.37		139,840	558.75		51.48		28,770	168,610
			76.12		38.14		2,904	1.20		50.00		60	2,964
			1,552.00		30.87		47,917	18.56		46.53		864	48,781
			944.74		36.16		34,166	177.46		60.75		10,782	44,948
			96.94		32.08		3,110	16.86		51.00		860	3,970
								35.38		48.00		1,698	1,698
		$500,000	2,027.00		35.82		72,616						72,616
			956.50		36.25		34,681	299.15		48.46		14,497	49,178
			923.62		31.97		29,533	191.39		53.90		10,317	39,850
			264.76		31.64		8,378						8,378
	145	1,000,000	231.88		40.65		9,427						9,427
			314.36		27.29		8,580	64.40		53.63		3,454	12,034
			246.90		31.39		7,751	24.90		46.09		1,148	8,899
			68.60		35.54		2,438	4.60		49.97		230	2,668
			457.92		34.00		15,569	28.80		45.00		1,296	16,865
	75		92.78		32.00		2,969						2,969
			201.19		36.00		7,243						7,243
			1,269.74	351.08	34.16	$18.01	49,772	285.25		56.44		16,101	65,873
	80		235.08	7.11	40.79	14.64	9,693	79.00		49.00		3,942	13,635
								17.00		51.41		874	874
			5,162.70		41.46		21,407	117.60		55.00		6,474	27,881
			159.75		16.48		2,633	129.00		55.03		7,099	9,732
			10.00		32.30		323						323
			185.72		46.62		8,658						8,658

Name of land owner.	Name of holder of first lease.	Names of operating co
Brooks, R. F. Estate		
Buller & McGregor	Gammon, Lichliter & Cummings	
Buller & McGregor	Gammon, Lichliter & Cummings	Double Quick M. Co.
Burgner Mining Co	Rochester Mining Co	
Burgner Mining Co	Ohio Lead & Zinc Co	
Burgner Mining Co	Lycan & Stitwell (Sludge mill)	
Burgner Mining Co	S. F. Clark & Co	
Byrd, Chas. A	Big Stick M. Co	Good M. Co., No. 1
Byrd, Chas. A	Big Stick M. Co	J. F. Robinson M. Co
Byrd, Chas. A	Big Stick M. Co	Bird Dog M. Co
Byrd, Chas. A	Big Stick M. Co	Integrity M. & M. Co.
Byrd, Chas. A	Glass Lead & Zinc Co	
Byrd, Chas. A	Old Dominion M. Co	
Carter Estate	Big Stick M. Co	Integrity M. & M. Co.
Carter Estate	D. J. Young & St. Paul M. Co.	McDonald & Wallace & Co
Carrick & Gage	Log Cabin M. Co	Sewell & Co.
Carrick & Gage	Log Cabin M. Co	Saddle Horse M. Co.
Campbell, Jas	Chicago-Joplin M. Co	
Center Creek Mining Co	Miscellaneous	
Center Creek Mining Co	Mercedes M. Co	
Center Creek Mining Co	D. C. McCroney & Co.	
Center Creek Mining Co	Morgan 40	
Center Creek Mining Co	Beasley Mill	
Center Creek Mining Co	Good Shepherd M. Co	
Center Creek Mining Co	South Town M. Co	
Chase, F. A	Queen City M. Co	
Chase, F. A	Royle M. Co	L. C. Sly
Chase, F. A	Royle M. Co	C. Beachwood
Chase, F. A	Gibbs & Co	
Chew, Clara B. & Phil	Mercantile Metal Milling Co	
Chew, Clara B. & Phil	Federated M. & M. Co. (Gussie K. Mine)	Lucky Abe M. Co.
Chew, Clara B. & Phil	Federated M. & M. Co. (Gussie K. Mine)	Webb & Co
Chew, Clara B. & Phil	H. H. Culver (Leo Lease)	
Chinn, Mrs. E. J	J. W. & B. C. Aylor (Eleventh Hour M. Co.)	Belles & Co
Chinn, Mrs. E. J	J. W. & B. C. Aylor (Eleventh Hour M. Co.)	McCauer & Co.
Chinn, Mrs. E. J	J. W. & B. C. Aylor (Eleventh Hour M. Co.)	F. L. Kenrick
Chinn, Mrs. E. J	J. W. & B. C. Aylor (Eleventh Hour M. Co.)	C. C. Hume
Chinn, Mrs. E. J	J. W. & B. C. Aylor (Eleventh Hour M. Co.)	John Hudson
Chinn, Mrs. E. J	J. W. & B. C. Aylor (Eleventh Hour M. Co.)	Big Moon M. Co
Chinn, Mrs. E. J	J. G. Doane	Acorn M. Co
Claycomb, S. H	Federated Mines & Milling Co	
Claycomb, S. H	General Lead & Zinc Co	

JASPER COUNTY—Continued.

any.	Acres of land owned or leased.	Capitalization.	Tons of zinc mined.		Prices received for		Receipts from sale of zinc ore.	Tons of lead mined.		Prices received for		Receipts from sale of lead ores.	Total amounts received for lead and zinc ores.
			Zinc.	Silicate.	Zinc, per ton.	Silicate, per ton.		Lead.	Dry-Bone.	Lead ore per ton.	Dry-bone, per ton.		
	54	$128,000	3,025.32		$35.55		$107,556						$107,556
	10	50,000	101.51		37.27		37,841	57.34		$51.64		$2,961	40,802
	200	300,000	286.65	.21	31.29	$11.00	8,970	1.91	.32	48.37	$30.00	102	9,072
	8	100,000	391.62		31.29		12,257	22.13		50.74		1,123	13,380
	4		58.73		34.96		2,050	.80		50.63		40	2,090
	10		992.18		29.43		29,202	218.64		54.44		11,902	41,104
			1,465.55		33.98		49,720	3.37		52.12		175	49,895
	30	40,000	164.35		32.95		54,154	314.85		52.00		16,380	70,534
	10		100.00		33.31		3,331	1.00		55.12		55	3,386
s	10		616.00		34.84		21,463	300.00		52.61		15,783	37,246
	10		221.45		25.95		5,747	297.25		72.42		2,152	7,899
	5	30,000	179.98		25.40		4,573	471.72		57.11		26,973	31,546
	20		142.27		40.45		5,755						5,755
	20		2,173.98		37.49		81,500	50.00		52.75		2,637	84,137
	10		1,168.91		38.84		45,401	33.17		57.27		1,899	47,300
	8		36.99		41.22		1,525	65.98		53.98		3,560	5,085
	14		515.02		32.49		16,734	220.13		54.23		11,938	28,672
	10		511.85		35.93		18,396	46.63		52.76		2,460	20,856
	15		447.30		32.00		14,311	29.56		48.05		1,420	15,731
	15		703.60		34.05		23,960	48.81		55.33		2,700	26,660
	25		2,059 74		36.56		75,308	174.23		60.00		10,454	85,762
	12		340.08		38.67		13,151	39.99		55.61		2,223	15,374
			66.28		32.60		2,161						2,161
			342.29		23.64		8,094	25.62		52.88		1,354	9,448
	30		306.34		29.99		9,187	280.40		53.56		15,020	24,207
			539.29		22.32		12,041	31.46		45.83		1,441	13,482
	10		273.24		32.33		8,836	12.18		55.72		678	9,514
			539.36		32.07		11,526	484.34		39.81		19,284	30,810
	54		7,541.65		37.06		279,506	283.70		50.55		14,341	293,847
	29		481.04		32.08		15,432	40.87		56.10		2,393	17,825
	29		179.88		35.84		5,907	47.22		47.38		2,237	8,144
	27		173.28		30.34		5,221	3.92		50.47		197	5,418
	14		727.15		27.05		19,670	65.00		52.51		3,413	23,083
	9		956.32		37.70		36,049	51.65		69.77		3,604	39,653
	5		673.96		38.27		25,796	44.38		53.53		2,375	28,171
	9		630.10		34.98		22,046	34.17		51.88		1,772	23,818
	8		53.90		40.19		2,166	3.10		46.08		142	2,308
	6							2.25		50.86		114	114
	2		1.96		30.63		.60						60

Name of land owner.	Name of holder of first lease.	Names of operating comp
Davey, Thos. N	Vesuvius M. Co.	
Elliott, C. E.	Old Judge M. Co.	
Empire Zinc Co	Southern Lead & Zinc Co. and many small operators	
Empire Zinc Co		
Excelsior Zinc & Lead Co	Battin & Co.	
Ferrington et al	H. Ammerman	Old Possum M. Co
Federated Mines & Milling Co		
Fox Heirs	Red Fox M. Co	Varner & Co
Fox Heirs	Red Fox M. Co.	West M. Co
Fullerton Mining Co	Luke & Ash Lease	Gibson M. Co.
Fullerton Mining Co	Luke & Ash Lease	Ruby M. Co.
General Zinc & Lead Co	Federated Mines & Milling Co	George H. & Goodrich mine
General Zinc & Lead Co	Eleven O'Clock M. Co	
General Zinc & Lead Co	Twelve O'Clock M. Co	
Goucher, D. R	Ravenswood M. Co	
Granby Mining & Smelting Co., Joplin	Amalgamated Z. & L. Co	
Granby Mining & Smelting Co., Joplin	Bay State Zinc M. Co	
Granby Mining & Smelting Co., Joplin	Underoof M. Co	
Granby Mining & Smelting Co., Joplin	Omega M. Co	
Granby Mining & Smelting Co., Joplin	Lounetta M. Co	
Granby Mining & Smelting Co., Joplin	Goldfield Velvet Consolidated M. Co	
Granby Mining & Smelting Co., Joplin	Williams M. & M. Co	
Granby Mining & Smelting Co., Joplin	Grace Zinc Co	
Granby Mining & Smelting Co., Joplin	Conqueror Zinc Cos	
Granby Mining & Smelting Co., Joplin	Theurer & Kennedy (Tailings)	
Granby Mining & Smelting Co., Joplin	Gravity Milling Co. (Tailings)	
Granby Mining & Smelting Co., Joplin	La Grande M. Co	
Granby Mining & Smelting Co., Joplin	Burress Sludge Co	
Granby Mining & Smelting Co , Joplin	Postal L. & Z. Co	
Granby Mining & Smelting Co., Joplin	Miscellaneous scrappers	
Granby Mining & Smelting Co., Oronogo	Oronogo Circle M. Co. (Two mines)	
Granby Mining & Smelting Co., Oronogo	Aurora Circle M. Co	
Granby Mining & Smelting Co., Oronogo	John W. Sweet	
Granby Mining & Smelting Co., Oronogo	Oronogo M. & Devel. Co. (Sludge mill)	
Ground & Irvin	First National M. Co	
Ground & Irvin	Millard M. Co	
Ground & Irvin	Egyptian Z. & L. Co	
Ground & Irvin	Provident M. Co.	
Ground & Irvin	Chicago-Joplin Mining Co.	
Ground & Irvin	Lucky Tom Mining Co.	
Ground, J. W	Chas Eakman & Co	

any.	Acres of land owned or leased.	Capitalization.	Tons of zinc mined		Prices received for		Receipts from sale of zinc ore.	Tons of lead mined.		Prices received for		Receipts from sale of lead ores.	Total amounts received for lead and zinc ores.
			Zinc.	Silicate.	Zinc, per ton.	Silicate, per ton.		Lead.	Dry-Bone.	Lead ore per ton.	Dry-bone, per ton.		
			1,005.55		$36.65		$36,863	172.95		$40.13		$6,941	$43,804
			214.33		28.16		6,037	8.12		52.62		427	6,464
			420.97		25.23		10,625	28.49		52.66		1,500	12,125
	1,240	$50,000	33.67		32.40		1,090	.74		48.35		36	1,126
			111.82		32.27		3,619	4.25		56.77		241	3,860
			102.36		25.11		2,570						2,570
			.51		25.00		12	106.93		53.24		5,693	5,705
	40		9.94		45.76		454						454
	160	1,000,000						386.00		64.02		24,714	24,714
	160		2.82		28.68		80	28.68		48.88		1,401	1,481
	60	1,000,000	933.54		32.29		30,151	95.53		52.40		5,006	35,157
	43	150,000	958.03		36.10		34,585	9.20		57.90		533	35,118
	1,170	3,000,000	293.66	65.40	33.40	$15.69	10,833	246.50		57.57		12,512	23,345
	440	1,600,000	786.26		26.99		21,226	193.12		51.71		9,988	31,214
		65,000	14.38		30.70		441	.06		43.00		2	443
			353.69		36.35		12,859	19.88		52.17		1,037	13,896
			220.35		26.00		572	1.80		50.00		90	662
	50	75,000	518.60		38.85		20,149						20,149
	4		159.04		28.34		4,517						4,517
	4		7.56		24.79		187	28.06		56.76		1,592	1,779
	26							151.06		51.53		7,784	7,784
	15	4,500	81.98		35.61		2,919	5.75		49.65		285	3,204
			.99		53.00		53	.05		30.00		1	54
			134.18		35.44		4,755	33.41		54.20		1,811	6,566
		140,000	66.14		36.28		2,399	1.48		48.67		72	2,471
			3.10		34.82		107	.13		42.00		5	112
			106.56		36.01		3,838						3,838
			112.10		26.62		2,984	10.86		52.31		568	3,552
			507.66		35.45		17,998	4.57		51.68		236	18,234
			579.89		36.79		21,338	51.00		36.50		186	21,524
			4.00		30.00		120						120
	130	800,000	373.46		35.04		13,088	203.09		54.04		10,977	24,065
			91.49		24.93		2,281						2,281
			59.32		17.60		1,044						1,044
			37.72		27.59		1,040						1,040
			160.43		35.65		5,719	8.20		54.02		443	6,162
	23	84,000	15.55		28.63		445	9.38		50.26		471	916
	40	100,000	619.81		34.56		21,420						21,420
			1,359.65		38.57		52,438						52,438
			1,358.26		35.74		48,546	5.22		43.52		227	48,773
	70		694.02		38.60		26,793						26,793
			96.94		24.98		2,421						2,421
			10.77		28.47		306						306

Name of land owner.	Name of holder of first lease.	Names of operating comp
Leonard Realty Co	Chitwood, Bessie Zinc Co	
Leonard Realty Co	Kimberly M. Co	
Leonard Realty Co	Old Times L. & Z. M. Co	
Leonard Realty Co	Bay State M. Co	
Leonard Realty Co	Northern M. Co	
Leonard Realty Co	Joplin Reduction Co	
Leonard Realty Co	Stripped Stocking Co	
Leckie, W. M	Missouri Standard M. Co	
Luscomb Land	Edgar County M. Co	Federated M. & M. Co
Luke, Ash, Stickney & Boggess		
Montgomery Lead & Zinc Co	Hemphill M. Co	Sundry Sub-lessees
Miami Realty & Mining Co	Herald Zinc & Lead M. Co	
Missouri Lead & Zinc Co		
Missouri Zinc Fields Co	Chas. T. Orr	Sundry Sub-lessees
Moonshine Mining Co	B. F. Wurzell	
Musselman Land	Reliance No. 1	
Musselman Land	Winifred M. Co	
Norton, E. H	E. L. Anderson	Nortonia M. Co
O'Keefe, E	W. T. Hadley	
O'Keefe, E	Gascorgne & Co	
Old Colony Lead & Smelting Co	Gibson & Co	
O'Neil Estate	South Town M. & M. Co	
Paomo Mining Co	J. E. Cofer	
Paoma Mining Co	Smith & Co	
Paoma Mining Co	Power M. Co	
Paomo Mining Co	E. Smith	
Paomo Mining Co	Burress & Co	
Pittsburg-Missouri Zinc & Lead Co	Missouri Metals Corporation	
Pittsburg-Missouri Zinc & Lead Co	Federated Mines & Milling Co	Baltimore mine
Pittsburg-Missouri Zinc & Lead Co	Federated Mines & Milling Co	Mandarin mine
Pittsburg-Missouri Zinc & Lead Co	Mable M. Co	
Pittsburg-Missouri Zinc & Lead Co	Harrison M. Co	
Pittsburg-Missouri Zinc & Lead Co	Theurer & Co. (Tailings mill)	
Pittsburg-Missouri Zinc & Lead Co	Eclipse Milling Co. (Tailings mill)	
Pittsburg-Missouri Zinc & Lead Co	North Sludge Co. (Tailings mill)	
Pittsburg-Missouri Zinc & Lead Co	All Jack M. Co	
Porter-Gilchrist Realty Co		
Rabbit Foot Zinc Mining Co	Merrick T. Esterbrook	
Reliance Mining Co. No. 3	Express Z. & L. M. Co	
Reliance Mining Co. No. 3	Federated M. & M. Co	
Reliance Mining Co. No. 3	Annalinda M. Co	
Reliance Mining Co. No. 3	B. L. Bartholow (Sludge)	
Reliance Mining Co. No. 3	Scrappers	

any.	Acres of land owned or leased.	Capitalization.	Tons of zinc mined		Prices received for		Receipts from sale of zinc ore.	Tons of lead mined.		Prices received for		Receipts from sale of lead ores.	Total amounts received for lead and zinc ores.
			Zinc.	Silicate.	Zinc, per ton.	Silicate, per ton.		Lead.	Dry-Bone.	Lead ore per ton.	Dry-bone, per ton.		
	12		360.00		$38.30		$13,783	18		$54.28		$977	$14,760
	10		352.00		32.12		11,303	82.25		47.80		3,932	15,235
	8		267.50		29.00		7,755	22.75		47.21		1,074	8,829
			307.50		24.43		7,513	6.50		50.30		327	7,840
	100	$1,000,000	7,127.66		37.80		269,555	1,558.67		48.03		74,860	344,415
			2,215.38		38.77		85,891	264.13		58.10		15,347	101,238
			2,516.97		33.00		83,066	286.34		56.64		16,219	99,285
	34	50,000	1,470.89		34.87		51,303						51,303
l)													
	160							182.16		53.20		9,691	9,691
	20		663.85		27.54		18,282	441.13		52.46		23,140	41,422
	20		287.59		31.77		9,138	8.88		58.03		515	9,653
	21		931.15		35.59		33,152	11.66		50.69		591	33,743
			240.11	18.44	25.12	$14.00	6,291	28.98	15.76	48.89	$28.33	1,863	8,154
	40	225,000	118.73		32.40		3,856	32.09		48.38		1,552	5,408
	143		56.10		33.49		1,878						1,878
			400.05		34.73		13,883	186.56		56.08		10,463	24,346
	160	36,000		182.99		12.75	3,334						3,334
			165,336.91	1,091.51	$32.91	$13.65	$5,603,455	32,535.37	119.47	$51.10	$28.29	$1,783,131	$7,386,586

Name of land owner.	Name of holder of first lease.	Names of operating comp
United Zinc Cos	Conqueror Zinc & Lead Co	
United Zinc Cos	Geo. H. Playter, trustee	
United Zinc Cos	King & Queen M. Co	
United Zinc Cos	C. W. Thuerer & Co. (Tailing mill)	
Underwriters Land Co		Company work
Underwriters Land Co	Golden Glow M. Co	
Underwriters Land Co	American Beauty M. Co	
Venango Royalty Co	Penn Zinc Co	Evansville M. Co
Venango Royalty Co	Penn Zinc Co	Utopia M. Co
Venango Royalty Co	Penn Zinc Co	B. L. Bartholow (Sludge mil
Walker, J. J	Sayers M. Co	
Ware, Bowman & Scott	Elkins L. & Z. Co	
Ware, Bowman & Scott	Oakwood M. Co	
Wheeler, J. M	Mrs. E. A. Norris	Toreador M. Co
Weymann, Henry	Bash Development Co	Red Fox M. Co
What Cheer Zinc Co	Boston Get There Zinc Co	
Wysbrod, E. V	Sundry Lessees	
Yale Land	F. L. Yale & Gilbert Barbee	
Zeta Land & Mining Co	Clark Craycroft	

NEWTON COUNTY.

Name of land owner.	Name of holder of first lease.	Acres of land owned or leased.	Capitalization.	Tons of zinc mined.		Prices received for	
				Zinc.	Silicate.	Zinc. per ton.	Silicate, per ton.
Allen, J. W	Sunrise M. Co						
Allen, J. W	Lone Hickory M. Co						
Allen, J. W	Oak Ridge M. Co						
Allen, J. W	Big Chief M. Co	240		528.82	1,220.00	$35.07	$18.47
Allen, J. W	Show Me M. Co						
Allen, J. W	Fairview M. Co						
Aylor, B. C	De Masters M. Co	35		735.00		30.00	
Bucklen & Wills	Hub Combination M. Co						
Bucklen & Wills	Hub M. Co						
Bucklen & Wills	Missouri Girl M. Co	44		274.50	62.00	28.72	15.00
Bucklen & Wills	Log Cabin M. Co						
Bucklen, H. E	Wolverine Cons. M. Co	205		2.47	181.66	34.05	17.05
Carrick & Co							
Davis, J. B. & N. Y	Mears M. Co	200		1,159.31	40.21	36.98	17.00
Granby M. & S. Co	Katy M. & M. Co						
Granby M. & S. Co	Golden Rule M. & M. Co						
Granby M. & S. Co	Fortune Teller M. & M. Co						
Granby M. & S. Co	Little Boss M. Co		$2,000,000	1,681.61	8,738.50	35.28	23.08
Granby M. & S. Co	Mascot M. Co						
Granby M. & S. Co	Fee Simple Lands						
Granby M. & S. Co	Estewawa & Home M. Cos						
Hogue Land	McKinney, T. J	80			1,934.44		18.00
Howard M. Co	Duquesne L. & Z. Co	240	50,000	353.64		33.90	
Kelly & Schemerhorn	Russell & Co	60			78.98		15.55
McCown Estate	Scott, Adam	40		110.37		22.17	
Newman Land	Milne, Mitchell & Foreman	40	20,000	4.97	12.49	47.24	19.77
Ohl Land	Empire Zinc Co	160		317.05	317.58	33.45	20.85
Owen, Etta H	Craycroft, Clark	40			684.15		16.14
Saginaw Investment Co	Mullin & Durbin	750	50,000		7.24		17.91
St. Paul M. Co	Alladin L. & Z. Co	100	2,000,000	318.22	191.22	32.60	16.37
Schifferdecker, C	Four Hundred Pros. Co	40		12.32		37.60	
				5,498.28	13,468.47	$33.92	$17.93

NEWTON COUNTY—Continued.

Name of land owner.	Name of holder of first lease.	Receipts from sale of zinc ores.	Tons of lead mined.		Prices received for		Receipts from sale of lead ores.	Total amount received for lead and zinc ores.
			Lead.	Drybone.	Lead, per ton.	Drybone, per ton.		
Allen, J. W	Sunrise M. Co	$41,099	111.26		$59.85		$6,660	$47,759
Allen, J. W	Lone Hickory M. Co							
Allen, J. W	Oak Ridge M. Co							
Allen, J. W	Big Chief M. Co							
Allen, J. W	Show Me M. Co							
Allen, J. W	Fairview M. Co							
Aylor, B. C	De Masters M. Co	2,205	15.00		45.00		675	2,880
Bucklen & Wills	Hub Combination M. Co	8,815	6.45	7.84	40.00	$38.00	555	9,370
Bucklen & Wills	Hub M. Co							
Bucklen & Wills	Missouri Girl M. Co							
Bucklen & Wills	Log Cabin M. Co							
Bucklen, H. E	Wolverine Cons. M. Co	3,271	2.71	12.68	47.66	32.98	547	3,818
Carrick & Co			116.54		53.91		6,283	6,283
Davis, J. B. & N. Y	Mears M. Co	43,539	55.00		50.90		2,800	46,339
Granby M. & S. Co	Katy M. & M. Co	261,111	589.68	132.28	53.12	20.00	33,970	295,081
Granby M. & S. Co	Golden Rule M. & M. Co							
Granby M. & S. Co	Fortune Teller M. & M. Co							
Granby M. & S. Co	Little Boss M. Co							
Granby M. & S. Co	Mascot M. Co							
Granby M. & S. Co	Fee Simple Lands							
Granby M. & S. Co	Estewawa & Home M. Cos							
Hogue Land	McKinney, T. J	34,820						34,820
Howard M. Co	Duquesne L. & Z. Co	11,997	82.57		50.80		4,193	16,190
Kelly & Schemerhorn	Russell & Co	1,228						1,228
McCown Estate	Scott, Adam	2,447	755.91	59.23	55.39	30.24	43,667	46,114
Newman Land	Milne, Mitchell & Foreman	246						480
Ohl Land	Empire Zinc Co	17,229	.33		57.00		18	17,247
Owen, Etta H	Craycroft, Clark	11,044		59.75		28.70	1,715	12,759
Saginaw Investment Co	Mullin & Durbin	1,296		47.24		29.86	1,410	2,706
St. Paul M. Co	Alladin L. & Z. Co	13,507	296.34	1.00	57.54	31.00	17,092	30,599
Schifferdecker, C	Four Hundred Pros. Co	463	23.70		60.00		1,425	1,888
		$454,551	2,055.49	319.98	$52.59	$30.11	$121,010	$575,561

LEAD AND ZINC—WESTERN DISTRICT—REPORTS OF ACCIDENTS, 1908.

FATAL ACCIDENTS.

Name of company or operator.	Name of injured person.	Date of accident.	Occupation of injured person.	Age	Single	Married	Children	Amount of insurance.	Nature of accident.	Coroner's verdict.	County.
Bullfrog Mine	Stratton, Otto	Jan. 18	Miner	17	1				Fell from tub	Concussion of brain	Jasper.
Coleman Bros	Poston, James A.	Feb. 4	Miner	27		1			Fall of roof	Accidental death	Lawrence.
	Denton, Arlie	Feb. 4	Miner	16	1				Unknown		Jasper.
Underwriters' Land	Ratekin, W	Feb. 28	Machine helper	33	1				Fall of roof	Accidental death	Jasper.
Underwriters' Land	Carter, ——	Apr. 3	Miner		1				Explosion of gas		Jasper.
Missouri Girl Mine	Hansford, Dennis	Apr. 3	Miner	23	1				Fall of roof	Fall of boulder	Newton.
Iroquois Mine	Sevier, Levi	Apr. 10	Ground boss	35		1	2		Fall of roof	Drowned in sump	Jasper.
Chitwood-Bessie Z. Co	Belch, U. C	Apr. 16	Miner	35		1	2	$10,000	Fall of rock	Fall of boulder	Jasper.
Ground Floor Mine	Fields, Isaac M	Apr. 23	Miner	50		1	3		Explosion of shot	Accidental death	Jasper.
Boston-Aurora Z. Co	Wilkerson, Duff	Apr. 24	Ground boss	31		1	2	2,000	Fall of boulder		Lawrence.
Express Z. & L. M. Co	Kivett, J. Newton	Apr. 26	Ground boss	33		1	3		Fell into shaft	Accidental death	Jasper.
Beasley Mill	Carmack, Tom	June 5	Machine man	30		1	2		Fall of boulder		Jasper.
	Duffey, Frank	June 6	Miner	23					Bad air		Greene.
	Maness, Earl	June 26	Miner	25		1			Material fell in shaft		Jasper.
Red Dog M. Co	Broam, Sam	July 20	Powder man	34		1	4		Explosion of shot	Accidental explosion	Jasper
Red Dog M. Co	Gilmore, Ora	July 20	Powder helper	25	1				Explosion of shot	Accidental explosion	Jasper.
Old Crow M. Co	Crow, Kinsey	Aug. 17	Driller	25				2,000	Fell into shaft	Accidental death	Jasper.
American Mine No. 2	Cameron, H	Sept. 16	Miner		1				Fall of rock	Unavoidable accident	Jasper.
Barr-Gloninger-Walsh	Feland, Robt	Oct. 3	Miner	47		1	6		Explosion of powder	Powder explosion	Jasper.
Barr-Gloninger-Walsh	Smith, Geo	Oct. 3	Miner	29	1				Explosion of powder	Powder explosion	Jasper.
Barr-Gloninger-Walsh	Lee, Jasper	Oct. 3	Miner	35		1	3		Explosion of powder	Powder explosion	Jasper.
	Temple, Fred	Oct. 8	Miner	21	1				Fell from tub		Jasper.
Grace Mine	Crabtree, S. F	Oct. 19	Miner	23		1			Fall of rock		Jasper.
Blackwell Mine	Cole, N. T	Nov. 12	Machine man	54		1	7		Tub fell on man		Newton.
Big Fly Mine	Workman, Geo	Nov. 16	Tub hooker	36		1	3	5,000	Material fell in shaft	Accidental death	Jasper.
Colgan M. Co	Luster, William	Nov. 18	Miner	35		1	1	5,000	Fall of rock	Accidental death	Jasper.
Mercantile M. & M. Co	Daniels, Geo	Nov. 18	Miner	27		1	2		Material fell in shaft	Accidental death	Jasper.
American Beauty Mine	Sparks, H. M	Nov. 18	Jigman	40		1	2		Fell in crusher jaws	Accident, falling on roll	Jasper
Arkansas Mine	Riley, J. C	Nov. 19	Machine man	41		1	4	2,000	Explosion of shot	Accidental death	Jasper.
Kohinoor Mine	Taylor, Wm	Nov. 19	Engineer						Explosion of boiler	Accidental death	Jasper.
Eureka Mine	McCoy, William	Nov. 24	Hoisterman	24		1			Fell in shaft		Jasper.
Mammoth Z. & L. Works	Wheeler, Herman	Dec. 8	Miner	28		1	2	10,000	Boulder fell in shaft		Jasper.
Common Sense Mine	Hurst, Jesse	Dec. 21	Miner	27		1	1		Explosion of powder		Jasper.

LEAD AND ZINC—WESTERN DISTRICT—REPORTS OF ACCIDENTS, 1908—Continued.

NON-FATAL.

Name of company or operator.	Name of injured person.	Date of accident.		Occupation of injured person.	Age.	Single.	Married.	Children.	Nature of accident.	County.
Keystone Mine	Dipley, Ed	Jan.	4	Miner					Scalded in sump	Jasper.
Keystone Mine	Stokes, Frank	Jan.	4	Miner					Scalded in sump	Jasper.
Bradford-Kansas City Z. Co.	Tanner, W	Jan.	4	Tub rustler					Material fell in shaft	Jasper.
Boston Get There M. Co	Charum, Richard	Jan.	9	Miner					Tub fell with man	Jasper.
Grand Central Mine	Pemberton, J. W	Jan.	15	Miner					Fall of roof	Jasper.
American Beauty Mine No. 2	Bodine, A. J	Jan.	21	Miner	30		1		Fall of tub with men	Jasper.
American Beauty Mine No. 2	Sumner, F	Jan.	21	Miner	30	1			Fall of tub with men	Jasper.
American Beauty Mine No. 2	Siler, W	Jan.	21	Miner	30		1		Fall of tub with men	Jasper.
Schoenherr & Walton Mine	Rowden, Joe	Jan.	25	Miner					Fall of roof	Jasper.
Omega Mine	Martin, Joe	Jan.	29	Miner	45		1	2	Fall of roof	Jasper.
Gibson Mine	Ferguson, A. C	Feb.	1	Miner					Tub fell on man	Jasper.
Analinda M. Co	Hilson, R. R	Feb.	11	Miner					Unknown	Jasper.
Mercantile M. M. Co	Graham, Will	Jan.	17	Miner					Tub fell with man	Jasper.
Bull Dog M. Co	Montgomery, Louis	Feb.	20	Machine man	22		1		Returned on squib shot	Jasper.
Consolidated L. & Z. Co	Milligan, J. E	Mar.	5	Miner					Hurt by mine car	Jasper.
Little Princess M. Co	Triplett, C. A	Mar.	5	Miner					Fall of rock in shaft	Jasper.
Empress L. & Z. Co	Kimberly, L. S	Mar.	—	Miner					Fell in shaft	Jasper.
Red Dog M. Co	Anderson, I. N	Mar.	14						Explosion of shot	Jasper.
Big Indian M. Co	Hickman, Geo	Mar.	16						Timber fell on man	Jasper.
Jack Harvard M. Co	Rhae, Stephen	Mar.	19							Jasper.
Juanita Mine	Hite, Will	Mar.	27	Miner					Fell from pillar	Jasper.
Gibson Mine	Watkins, A	April	2	Tub hooker					Hurt by tub	Jasper.
Chitwood-Bessie Z. Co	Sowers, Samuel	Apr.	16	Miner					Fall of rock	Jasper.
Big Three Mine	Stockton, A. J	Apr.	17	Miner						Jasper.
Federated M. & M. Co	Danley, A. J	Apr.	21	Miner					Fall of rock	Jasper.
Captain Mine	Stevens, H	Apr.	28	Miner					Fall of roof	Jasper.
Federated M. & M. Co	Hollman, Horace	May	—	Miner					Fall of material in shaft	Jasper.
Dinger M. Co	Caudell, C. H	May	—	Miner					Timber fell on man	Jasper.
	Henson, A. L	June	5	Miner					Bad air	Greene.
Electrical Z. & L. M. Co	Mason, C. H	June	15	Machine helper	30	1			Explosion of powder	Jasper.
Electrical Z. & L. M. Co	Fry, Jos	June	15	Machine helper	28	1			Explosion of powder	Jasper.
Elking Mine	Maness, Al	June	17	Miner					Fell in sump	Jasper.
Egyptian Mine	Honer, C. A	June	—	Miner					Fall of roof	Jasper.
Mollie O. M. Co	Vickers, Carl	June	3	Miner					Fall of rock	Jasper.
Ice Plant Mine	Alberts, Luther	July	7	Miner					Explosion of powder	Jasper.
Jack Harvard M. Co	Bryson, Joseph	July	—	Miner					Fall of rock	Jasper.
Grace M. Co	Rader, W. A	July	—	Miner					Fall of rock	Jasper.
Red Dog M. Co	Enright, Chas	July	20	Miner					Explosion of shot	Jasper.
American Beauty Mine	Dickey, T. L	July	21	Mine Superintendent					Struck by tub	Jasper.
Ground Floor M. Co	Medsker, "Raz"	Aug.	7	Miner					Explosion of shot	Jasper.
Ground Floor M. Co	Carmack, Geo	Aug.	7	Miner					Explosion of shot	Jasper.

LEAD AND ZINC—WESTERN DISTRICT—REPORTS OF ACCIDENTS, 1908—NON-FATAL—Continued.

Name of company or operator.	Name of injured person.	Date of accident.	Occupation of injured person.	Age.	Single.	Married.	Children.	Nature of accident.	County.
Providence M. Co.	Anderson, W. S.	Aug. 18	Miner	30				Fall of roof	Jasper.
Continental M. Co	Driscol, Geo.	Aug. 25	Miner	40				Explosion of shot	Jasper.
Hennessey M. Co	McAferty, J. S.	Aug. 31	Miner		1			Tub fell with men	Jasper.
Hennessey M. Co	Fisher, Penn	Aug. 31	Miner			1		Tub fell with men	Jasper.
Hennessey M. Co	Workman, Fred	Aug. 31	Miner			1		Tub fell with men	Jasper.
American M. Co	Bayse, Otis	Sept. 15	Miner					Hurt at mill	Jasper.
American M. Co	Cooper, Jas	Sept. 15	Miner					Fell on rock	Jasper.
American M. Co	Wade, E. T	Sept. 15	Miner					Fall of rock	Jasper.
Oreole Mine	Stilwell, C	Sept. 16	Miner	28				Fell in shaft	Jasper.
Good Shepherd Mine	McClary, W. H	Sept. 16	Miner					Fall of rock	Jasper.
Continental L. & Z. Co	Cripps, Otto	Oct. —	Miner						Jasper.
Vantage Z. & L. Co	Stewart, J	Oct. 6	Miner					Fall of rock	Jasper.
Barr-Gloninger-Walsh	Holderman, Jack	Oct. 7	Pump man					Explosion of powder	Jasper.
Barr-Gloninger-Walsh	Gibson, E. G	Oct. 7						Explosion of powder	Jasper.
Barr- Gloninger-Walsh	Wright, Chas	Oct. 7	Hoister man					Explosion of powder	Jasper.
Barr-Gloninger-Walsh	Hammick, Chas	Oct. 7	Miner					Explosion of powder	Jasper.
Yellow Dog Mine	Dorsey, Barney	Oct. 8	Machine man	1				Explosion of powder	Jasper.
Yellow Dog Mine	Cox, Fred	Oct. 8	Machine helper	1				Explosion of powder	Jasper.
Lucky Budge Mine	Stoveall, John	Oct. 18	Miner					Fall of rock	Jasper.
Paragon Mine	Graham, Ralph	Oct. 21	Machine man					Fall of rock	Jasper.
Wolf's Heart Mine	Bigelow, Dan	Nov. 5	Miner			1		Fall of rock	Jasper.
Moark-Nemo Mine	Steele, Fred	Nov. 17	Miner					Explosion of shot	Jasper.
Mercedes M. Co	Sparrow, Chas	Nov. —	Miner					Fall of rock	Jasper.
Arkansas Mine	Dameron, D. C	Nov. 18	Hoister man					Falling rock	Jasper.
Kalitan M. Co	Hightower, Rastus	Nov. 18	Miner					Material fell in shaft	Jasper.
Steadley Mines	Angleton, Jesse	Dec. 5	Miner					Fall of boulder	Jasper.
Chitwood-Bessie Z. Mine	Atwood, Clark	Dec. 10	Machine man	35		1		Fall of rock	Jasper.
Lucky Jack Mine	Hatcher, W. J	Dec. 10	Miner	38				Explosion of shot	Jasper.
Blair Mine	Branham, R. B	Dec. 12	Miner					Material fell in shaft	Jasper.
Winifred, D	Stoute, Austin	Dec. 15	Miner					Fall of boulder	Jasper.
Temagami Mine	Cunningham, Geo. T	Dec. 17	Miner					Fall of boulder	Jasper.

SUMMARY—COAL PRODUCT, VALUE, MACHINERY, EMPLOYES, ETC., BY COUNTIES, 1908.

County.	Kind of opening				Number of mines operated	Kind of power.					How ventilated.			Plan.		Powder.		Employes.						Tons coal mined	Average price received at mines	Amount received for output	Casualties.	
																		Miners.		Other help.		Total.						
	Shaft	Slope	Drift	Strip pit		Steam	Horse	Hand	Electricity	Gasoline	Natural	Furnace	Fan	Long wall	Pillar and room	Kegs	Cost to miners	Winter	Summer	Winter	Summer	Winter	Summer				Fatal	Non-fatal
Adair	10	4	2	....	16	12	3	....	1	....	1	3	12	3	14	35,434	$70,868	916	702	433	355	1,349	1,057	568,446	$1.61	$834,540	1	3
Audrain	9	....	....	....	9	4	5	....	....	....	4	....	5	9	....	315	....	128	88	35	28	163	116	31,301	2.01	56,929		..
Barton	6	7	7	10	30	7	3	9	....	....	13	2	5	1	19	5,139	10,038	325	262	50	46	375	308	103,765	1.68	145,999	..	..
Bates	16	8	2	14	40	4	16	8	....	....	14	7	5	1	24	5,473	10,504	303	214	102	76	405	290	136,531	1.55	219,635	1	1
Boone	4	4	....	....	8	....	5	3	....	....	3	5	....	....	8	725	1,447	78	32	16	5	94	37	26,842	1.80	51,744	..	..
Caldwell	1	....	....	....	1	1	....	....	....	....	....	....	1	1	....	....	....	50	30	9	7	59	37	10,800	2.40	25,920	..	..
Callaway	9	1	1	....	11	2	8	....	....	....	4	4	3	8	3	211	376	87	45	12	6	99	51	50,719	2.10	104,195	..	1
Carroll	2	1	1	....	4	....	3	1	....	....	4	....	....	4	....	10	15	11	5	....	....	11	5	1,581	2.75	4,348	..	..
Cass	1	....	....	....	1	1	....	....	....	....	....	....	1	....	1	600	1,200	20	20	8	8	28	28	5,340	2.00	10,680	..	..
Cedar	....	1	....	....	1	....	1	....	....	....	1	....	....	....	1	....	....	....	....	....	....	....	....	165	2.47	408	..	..
Chariton	2	2	1	....	5	....	2	2	....	....	3	1	....	4	....	....	....	11	6	3	2	14	8	879	2.70	2,571	..	..
Clay	1	....	....	....	1	1	....	....	....	....	....	....	1	1	....	....	....	100	100	22	22	122	122	37,786	2.15	81,239	..	..
Cole	1	....	....	....	1	1	....	....	....	....	1	....	....	....	1	15	28	3	....	2	....	5	....	500	2.00	1,000	..	..
Dade	4	1	1	....	6	....	6	....	....	....	4	1	....	....	6	....	....	18	11	1	3	19	14	4,654	1.66	8,104	..	..
Grundy	1	....	....	....	1	....	....	....	1	....	....	1	....	1	....	....	....	53	25	8	7	61	32	10,822	2.60	28,137	..	..
Henry	13	2	....	....	15	5	8	1	....	....	5	6	4	4	11	11,350	22,610	438	387	133	115	571	502	216,152	2.15	366,508	..	..
Howard	....	4	2	1	7	1	....	5	....	....	5	1	....	4	2	10	18	43	21	9	9	52	30	7,438	1.98	13,699	..	..
Johnson	5	3	1	3	12	3	1	2	1	....	5	2	2	1	7	165	122	58	49	10	6	68	55	7,888	2.17	16,468	..	..
Lafayette	24	4	19	....	47	14	12	17	4	....	6	19	20	41	6	820	1,640	1,436	845	676	368	2,112	1,213	571,908	1.90	1,034,334	1	4
Lewis	....	....	....	1	1	....	....	....	....	....	....	....	....	....	....	....	....	3	....	....	....	3	....	123	2.37	292	..	..
Linn	8	....	....	....	8	3	4	....	....	....	1	3	3	7	....	646	1,292	310	254	89	83	399	337	104,240	2.72	230,272	..	12
Livingston	1	....	....	....	1	....	1	....	....	....	1	....	....	....	1	....	....	5	....	1	....	6	....	1,010	2.00	2,020	..	..
Macon	14	4	1	....	19	10	6	2	....	....	3	5	10	4	15	37,632	75,249	1,491	1,326	586	554	2,077	1,880	851,130	1.66	1,217,584	5	9
Moniteau	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	3,100	....	8,750	..	..
Monroe	1	....	....	....	1	....	1	....	....	....	1	....	....	....	1	2	4	4	4	....	....	4	4	800	2.75	2,200	..	..
Montgomery	2	....	....	....	2	....	....	2	....	....	1	1	....	2	....	6	13	12	5	2	....	14	5	1,382	2.50	3,455	..	..
Morgan	1	....	....	....	1	1	....	....	....	....	....	....	1	....	1	143	....	5	5	3	3	8	8	1,683	2.25	3,787	..	..
Platte	1	....	....	....	1	1	....	....	....	....	....	....	1	1	....	....	....	508	349	172	113	680	462	190,806	2.00	380,612	..	..
Putnam	3	6	6	....	15	2	7	4	....	2	7	6	2	4	15	2	....	224	166	64	49	288	215	54,505	1.70	92,183	..	..
Ralls	3	3	1	....	7	....	4	3	....	....	3	2	2	6	1	2	4	55	32	9	5	64	37	14,415	2.20	26,585	..	..
Randolph	3	4	7	....	14	1	9	4	....	....	4	9	1	....	14	1,403	2,720	77	60	13	12	90	62	31,266	1.50	47,078	2	..
Ray	36	1	10	....	47	18	6	10	....	....	9	20	16	44	1	....	....	1,027	689	396	316	1,423	1,005	294,230	2.04	531,931	..	6
Saline	1	....	....	....	1	....	1	....	....	....	1	....	....	....	....	4	8	4	....	....	....	4	....	150	2.25	300	..	..
St. Charles	....	3	....	1	4	....	....	2	....	....	3	....	....	1	3	5	8	6	3	....	1	6	4	812	2.00	1,915	..	..
Schuyler	1	3	1	....	5	....	2	3	....	....	3	1	....	....	5	1	....	15	1	....	....	15	1	2,425	1.95	3,367	..	..
Sullivan	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	3,263	....	6,058	..	..
Vernon	3	....	....	3	6	1	2	....	....	....	2	1	1	....	3	2,375	4,737	50	43	37	39	87	82	52,197	2.04	79,483	..	1
Totals	187	66	63	33	349	93	116	78	7	2	122	100	96	152	163	102,488	$202,901	7,874	5,769	2,901	2,238	10,775	8,007	3,400,644	*$1.66	$5,644,330	10	37

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*Average price of coal shipped by rail and not consumed locally.

SUMMARY EASTERN LEAD AND ZINC DISTRICT, 1908.

Counties.	Capitalization.	Acres of land.	Shafts.		Lead.		Zinc.		Copper.		Cobalt.		Nickel.		Iron.		Baryta.		Total value of all products named .....
			Number	Average depth.	Tons...	Value...	Tons...	Value..	Pounds.	Value..	Pounds.	Value..	Pounds.	Value..	Tons...	Value..	Tons...	Value..	
Butler															2,661	$5,987			$5,987
Cole					5	$250											2,024	$7,084	7,334
Crawford	$1,500,000	7,000	2	85											36,864	92,160			92,160
Dade							40	$800											800
Franklin	30,000	203			85	4,275									9,000	15,750	360	1,890	21,915
Howell															6,390	9,585			9,585
Jefferson	200,000	5,082	10	150	933	21,892	1,434	16,496											38,388
Madison	6,200,000	2,893	6		12,500	443,051			1,100,000	$145,000	51,000	$75,000	83,000	$35,000					698,051
Moniteau					15	750	120	3,600											4,350
Phelps															7,655	15,300			15,300
St. Francois	35,000,000	43,248	25	370	129,983	6,207,645									8,300	20,000			6,227,645
Stoddard															485	776			776
Washington	710,000	47,631	10	62	1,537	74,665											13,269	52,901	127,566
Wayne							2,040	40,800							13,728	25,128			65,928
Totals	$43,640,000	106,057	53	....	145,058	$6,752,528	3,634	$61,696	1,100,000	$145,000	51,000	$75,000	83,000	$35,000	85,083	$184,686	15,653	$61,875	$7,315,785

RECAPITULATION—WESTERN DISTRICT.

County.	Zinc ores.				LEAD ORES.				Total value 1908 $ products.
	Zinc—tons.	Silicate—tons.	Value zinc.	Value silicate.	Lead—tons.	Dry-bone—tons.	Value lead.	Value dry-bone	
Greene	1,751.13		$71,122		187.32		$10,388		$81,510
Jasper	165,336.91	1,091.51	5,585,412	$18,043	32,535.37	119.47	1,779,529	$3,602	7,386,586
Lawrence	4,641.98	2,073.39	155,918	27,977	67.40		3,126		187,021
Newton	5,498.28	13,468.47	287,525	167,026	2,055.49	319.98	115,826	5,184	575,561
Totals	177,228.30	16,633.37	$6,099,977	$213,046	34,845.58	439.45	$1,908,869	$8,786	$8,230,678

MINE INSPECTIONS.

1908.

REPORTS OF COAL MINE INSPECTIONS.

BY R. S. THOMAS.

ADAIR COUNTY.

GREAT NORTHERN FUEL COMPANY.

J. G. Trimble, president; I. B. Grant, general manager and superintendent; general offices located at Kansas City, and local office established at Novinger. Company has capital stock of $1,000,000, and has a lease on 2,605 acres of coal land.

MINE NO. 7.

This mine is located one mile north of Novinger, and comprises a field of 200 acres of coal land, upon which the company has a lease. John Kelley is foreman.

Coal is reached through a shaft opening 85 feet deep. Coal seam is 3 feet and 10 inches in thickness, and is overlaid with a good strong roof. Ventilation is produced by a 14-foot fan, forcing the air into the mine. Coal is mined on the room and pillar plan.

This mine was inspected June 18, 1908, and the top structures were found to be in good shape. Machinery, cages and one rope were found to be in good shape; one rope was condemned. A new one was ordered to be installed immediately, and the management was forbidden to allow the use of the old rope.

I found a decided improvement in the interior of the mine, both as to ventilation and sanitation, which were complained of on my former visit. On a former visit to this mine I requested that the air current be shortened up and cut off from traveling the old works. Mr. Sullivan, who has charge of this work, carried out my instructions satisfactorily. After a suspension of work in this mine for two months, I found the air courses to be in excellent condition. All of the old abandoned works have been securely sealed up, making the air pure and free from black damp. Double doors have been placed on main currents, thus avoiding any possible chance of leaks.

MINE NO. 1.

The mine is located one and one-half miles south of Connelsville. Ed White is foreman.

It has a slope entrance. The coal is pulled out by steam power over an inclined trestle to a landing, where it is dumped into railroad cars. The coal averages 42 inches in thickness, and is overlaid with a slate roof.

Since the new air shaft has been sunk, the ventilation is produced by a gasoline engine as the motive power, which drives the fan of twelve feet at a rate of sixty revolutions per minute, which gives entire satisfaction, as far as quality of air is concerned.

An inspection of this mine was made August 19, 1908, and same was found to be in excellent condition; no improvements could be asked for in this respect. It was, indeed, a pleasure to go through this mine, and the foreman in charge is entitled to praise for his efforts in bringing a poor mine to its present excellent condition. A great deal of work has been accomplished. A new air shaft has been sunk, the bottom of which is constructed to my perfect satisfaction. The intake is well timbered, being eight feet high and fourteen feet wide. This gives the air plenty of room to get away from the bottom. The air is split to the north and south, and an abundant supply of good air circulates through the entire mine. Air courses and entries were clean, high and well timbered. The bottom of the slope has all been retimbered in a satisfactory manner.

MINE NO. 23.

This mine is located one-half mile south of Novinger, Missouri, and is only in a state of development, although the mine has been sunk for over three years. The foreman of this mine is John Kelley.

The pit head is well built, and is equipped with a geared hoisting engine. The engine and boiler rooms are not of modern architecture, neither are they large or commodious.

The coal is reached through a shaft opening 65 feet deep, and penetrates a coal seam of 42 inches in thickness, which is overlaid with a good roof. Ventilation is produced by a 14-foot fan, with satisfactory results.

I made a thorough inspection of this mine on July 11, 1908, and found it in a very satisfactory condition as to ventilation and sanitation. The unfortunate circumstance connected with this shaft is that the company was compelled to sink the mine on the north edge of their coal holdings. This cuts them down to a one-sided shaft, which will naturally curtail the output.

HARL COAL COMPANY.

This mine is located three miles west of Kirksville. Shaft, 70 feet deep; coal, 38 to 40 inches in thickness, and is overlaid with a slate and sand-rock roof. Steam power is used for hoisting purposes, and ventilation is natural. I inspected this mine December 1, 1908, and found it to be in fair condition for the number of men employed.

IDEAL BLOCK COAL COMPANY.

This mine is located one-half mile north of Stahl, Missouri. H. H. Guy is superintendent and foreman.

The coal is reached by a drift. This is the top vein of the northern field, and is a fine quality of coal for domestic use. The coal seam is 3 feet

8 inches thick, and is worked on the long wall system. Ventilation is produced by a furnace, with good results. Horse power is used at the mine.

I visited this mine on August 11, 1908, and found condition of mine generally good for the few men employed.

J. M. IVIE AND SONS.

This is a new mine located one and a half miles west of Kirksville, comprising 218 acres owned in fee simple by Mr. Ivie.

The coal is reached through a shaft opening 128 feet deep. This mine has a new brick engine house, a steam hoisting engine, good, substantial tipple, cages, ropes and safety appliances, all new and of the latest pattern. The coal averages 42 inches in thickness, of good quality, and overlaid with 28 feet of sand rock, which makes an excellent roof. Ventilation is produced by a twelve-foot fan placed over the partition of the main shaft.

I made a thorough inspection of this mine on February 4, 1908. The air shaft was not yet sunk, but one was started April 1st and pushed to completion. The underground workings are opened to the east and west, with cross entries to the north and south. There was an abundance of fresh air for the number of men at work. The sanitary condition and general appearance of the underground workings showed plainly that the manager had no practical mining experience; everything had a neglected, out-of-order and butchered-up appearance. Some of the entries were out of alignment, and the miners were allowed to drive their rooms any width that suited them, some being driven in 40 feet wide and little or no attention paid to propping same. The permanent air courses to connect with the air shaft have not been figured in. I told Mr. Ivie if he did not get a competent man to take charge of his mine it would be greatly damaged and, possibly, be ruined. I expect to see this mine become a good producer in the near future, if the method of taking the coal out is improved. Railroad shipping facilities are assured for the mine at an early date. I made a second inspection of this mine September 3, 1908, and found it to be in satisfactory condition.

This fine field of coal has surprised a great many men who have been in the coal business for a number of years. A great many are still of the opinion that it is only a local pocket of coal; in this they will be doomed to disappointment, for the field will prove to be of large area. The Inspector expects, in the near future, to see many large producing mines in this territory.

KANSAS CITY MIDLAND COAL COMPANY.

This company controls a lease of 1,110 acres of land in Adair county, owned by J. N. Shoop, J. H. Bradford and S. P. Novinger, and is capitalized for $50,000, with Bernard Corrigan, president, and Ed Corrigan, secretary and treasurer of the company.

But one mine was operated during the year—No. 2, located two and one-half miles northeast of Novinger. The coal seam averages 40 to 43 inches in thickness, and is overlaid with slate roof. This coal is reached by a shaft opening 155 feet in depth. Ventilation is furnished by a twelve-foot fan, making 125 revolutions per minute and forcing a large volume of air into the shaft.

I made a visit to this mine on June 17, 1908, by request of the local union. I found the top structures in good condition. New ropes had been installed, cages and safety appliances had been overhauled and made as good as new; machinery was all in good shape. This mine was also shut down during the general suspension. The stopping of the fan changed the temperature of the mine, causing the roof in the air courses to sweat, disentegrate and cave in, obstructing the ventilation to such an extent that it was impossible to carry away the surplus gases accumulated by the burning of lamps and the breathing of the men and mules. Cross-cuts between main entries had become settled and leaky. The whole mine was greatly damaged. I found some of the air courses caved in for several hundred feet, and the company had ten men employed endeavoring to open same. The fan was only started some few hours before the men started to work. This was not sufficient time to allow the mine to be cleared of accumulated black-damp and other dangerous gases. There was considerable black-damp in the mine at several points. Instructions were issued to have the air courses cleaned and repaired at the earliest possible moment. The split system of ventilation is practiced here and the coal is taken out in thousand feet blocks. The old workings are cut off with new entries and air courses and the abandoned works are securely sealed up. This is a very satisfactory method of shortening the distance for the air to travel. Even with this method, the excavated territory is becoming too great for one fan to supply air.

MANUFACTURERS COAL AND COKE COMPANY.

This company owns and controls large tracts of coal lands in this county by fee simple titles and leases. The company is in charge of the following officers: A. E. Harper, president and general manager; J. H. Lacey, secretary and treasurer, and Geo. Evans, general superintendent. The company has been operating six mines in this field, but at present only three are being worked. Two of these are near Connelsville; the other one is south of Novinger.

MINE NO. 4.

I was called to inspect this mine, arriving there August 10, 1908. On this date I made a thorough inspection of the mine and noticed that a great deal of work had been done, improving the condition of the mine since my former visit. The bottom of the slope had all been retimbered and put in good shape. New sumps had been dug large enough to hold all the surplus water, keeping it from accumulating on the haulage roads. I found the entries well timbered and in good condition. The ventilation was not what it should have been, nor what I naturally expected from a twelve-foot fan, which should have been sufficient to keep the air courses clean, thus furnishing an abundant supply of good air to the men. This defect was caused by the air courses having caved in during the suspension. This has all been cleaned up now with the exception of one fall, which was enough to block the air and reduce its force to one-half. The amount of air was not sufficient in volume to carry away the black damp which was circulating in the mine. Orders were given to have this defect immediately remedied, which will insure sufficient air. Two doors were needed, which were ordered to be replaced at once. I find that after the mine has been put in good shape each suspension of work brings on the same defects, which must be pointed out and remedied.

MINE NO. 50.

Mine No. 50 is located one and one-half miles west of Novinger. Davis S. Shaw is foreman. The coal has an average thickness of 42 inches and is reached through a shaft opening 85 feet in depth. Steam power is used for hoisting, and ventilation is furnished by a 14-foot fan.

I made a thorough inspection of the mine on August 18, 1908, and found all of the top structures, machinery, cages, ropes and safety appliances in good condition. I did not find the fan in very good condition. It seemed to run irregularly, caused by a crooked journal. This defect was pointed out to the engineer. The fan discharges the air into the mine, and it splits at the bottom to the north and south, furnishing air to the various cross-entries. I found the mine in fair condition as to ventilation and sanitation, but it will not remain in this condition unless immediate attention is given to the air courses. The mine has been idle a great deal. The roof is composed of such material that the air causes it to disintegrate, crumble and to fall in large pieces where the proper timber support is not furnished. During the months of June, July and August it is nearly impossible to keep the fall entirely cleaned. The warm air carries a large amount of moisture, and this deposits itself upon the roof, which is strongly impregnated with lime. This combination starts the roof to working along the ribs where the moisture is the greatest. After this process has continued a few days, the weight of the roof in the center of the entry adds to the completion of the fall. This has been going on for quite a while in the air courses at Mine No. 50, and they are closing up gradually; even where they are timbered the bottom heaves and the sides stuff out from behind the timbers. Part of the air course is cleaned up in order to give the air supply sufficient room. It will all have to be thoroughly cleaned so as to ventilate the face of the works. I have suggested to the foreman the advisability of using all of his roads in the mine for hauling coal over them. This would eliminate the air courses being abandoned, and would assure free intake as well as return for the air and the cost would be no greater. Drivers could come and go without waiting for each other, as they are compelled to do on a single road. All the doors were found to be in good condition.

APPLEBY AND HADDOCK MINE.

This mine is being sunk within the city limits of Novinger, the intention being to use the coal for domestic purposes. On the date of my visit, August 14, 1908, the shaft was down 30 feet. Four men were employed.

Note.—No report was furnished, as to the output of the mine, for 1908.—Secretary.

MAIWALD MINE.

Karl Maiwald operates a small drift mine on 160 acres owned in fee simple. This mine is located three miles northwest of Stahl. The coal is reached by drifting into the hill, and is three feet eight inches in thickness. The long wall system of mining is employed. Horse power is used for hauling the coal out of the mine. Natural ventilation. Entire output is used in the neighborhood for domestic purposes. Inspected August 24, 1908.

Note.—No report of the output of this mine was furnished for the year 1908.—Secretary.

HOFFMAN MINE.

Fred Hoffman operates a small drift mine near Stahl, and is doing all the work himself. I visited this mine August 24, 1908.

WALKER MINE.

Anderson Walker operates a drift mine three miles northwest of Stahl in the same locality as the Maiwald mine, and exactly the same conditions exist. Very little coal is produced, and this is used entirely in the immediate neighborhood. Inspected August 11, 1908.

GATES MINE.

Marion Gates owns and operates a small drift mine two and one-half miles northwest of Stahl. The coal is three feet eight inches in thickness, being overlaid with a good slate roof, and is worked on the long wall system. Coal entirely consumed in the neighborhood. Inspected August 11, 1908.

NASH MINE.

J. O. Nash operates a small drift mine two miles east of Stahl. They are working the same vein of coal as the Stahl Coal Company. The entire output is hauled in wagons and is used in the neighborhood. Two miners were employed. Inspected August 11, 1908.

CONSOLIDATED STAHL COAL COMPANY.

H. J. Whitsett is general manager and John McLain is superintendent. This mine is located one-half mile northwest of Stahl, Missouri. I inspected this mine on August 24, 1908. The coal is reached by a drift, and horse power is the means employed to bring the production to the surface. The coal is brought from the mine over an incline plane two hundred feet long to a landing, where it is dumped into railroad cars at the top. The long wall system is used in mining, and the coal measures three feet eight inches in thickness. All of the production is mined by one Goodman mining machine, which mines the coal to a depth of two feet; this machine will cut four hundred feet per day. The coal breaks very shortly after it is mined, and makes a very fine grade of domestic coal. Ventilation is produced by a furnace with good results. I found the ventilation and sanitation of the mine to be good.

The mine is run on the co-operative system; that is, every person connected with the mine owns a certain amount of stock. The loaders are paid fifty cents per ton for loading the coal. The mine was not operated to a very great extent during 1908, owing to some difference over prices paid for mining. Inasmuch as the entire product is used for domestic purposes, the mine was not worked during the summer months. Most of the coal is sold in Kansas City.

STAR COAL COMPANY.

C. B. Miller, president; S. I. McKeehan, vice-president, and A. H. Garges, secretary and treasurer. The office of this new company will be located at Kirksville, Missouri. It is a home company and has a capital of $22,000. They own and have leased twenty-five thousand acres of coal land. It is the intention of the company to develop the new coal field discovered here and prospect for more coal five miles south and west of Kirksville. The coal in the prospect holes shows a measurement of 40 to 44 inches in thickness, overlaid with twenty feet (in thickness) of sand rock, which will make an ideal roof.

A shaft is being sunk close to the western corporate limits of the town of Kirksville. No expenditure will be spared to make this one of the best shafts in the State. The measurements of this shaft is 7 feet wide by 15 feet 8 inches long. It is being curbed with the best white oak timber, 3 inches by 6 inches, with two rows of buntons. An up-to-date tipple and a commodious engine room will be built. A seventy-five horse power electric engine will be installed, and electricity will take the place of steam in running the fan and for hoisting purposes. This new coal field will add greatly in advancing Adair county to the foremost coal producing county in the State. At this visit the main shaft was sunk to a depth of 22 feet.

I made a second inspection of this mine December 1, 1908. James Strop was then superintendent and Wm. Gouch, foreman.

I found the new tipple, 42 feet high, completed, with a landing on top, with three large chutes built for loading wagons. Engine house, blacksmith shop and mule stables, all up-to-date in every particular. I found the engine room, which was under course of construction at the time of my former visit, completed, and a seventy-five horse power electric engine had been installed and was in full operation. Ropes, cages and safety appliances all in good condition.

The shaft is 249 feet deep, sunk close to the eastern crop of the coal. Ventilation is furnished through a partition of the shaft. The mine will be opened entirely to the west. The coal, at this visit, is about 30 inches in thickness, but increases as it is worked to the west. The drill holes show a thickness of 44 to 46 inches. The covering, or roof, is the best in the State, being 28 feet of sand stone. At this visit sixteeen men were employed.

ROMBAUER COAL COMPANY.

MINE NO. 2.

This company owns and controls by lease 2,180 acres of coal land. R. G. Rombauer, president and general manager; D. L. Sprecher, vice-president;

M. T. Rombauer, secretary, and Martin Rabbit, superintendent. Mines Nos. 2 and 3 are being operated by this company.

I made an inspection of Mine No. 2 on June 19, 1908, and found it in satisfactory condition. James Griffith is foreman. This mine is located three-fourths of a mile north of Novinger. Coal is reached through a shaft opening 70 feet deep. Ventilation is produced by a 12-foot fan, with excellent results. The coal seam is 42 inches in thickness, and is mined on the pillar and room plan. The equipment of this mine was found to be, as usual, very good, every possible care being taken of all top structures, machinery, ropes, cages and safety appliances. Care is given to ventilation from the fan house to the furtherest interior of the mine. I found a sufficient volume of pure air circulating every section of the mine.

This mine, like others in this section, has sustained its quota of damages. The mine lost several of its cross-entries during the suspension, owing to squeezes. They will have to be rebrushed in the bottom from one end to the other before they can be used again.

I made a second inspection of this mine on August 20, 1908, and found it in excellent condition.

ROMBAUER COAL COMPANY.

MINE NO. 3.

Located three miles north of Novinger. Railroad connections by a spur switch extending from the main line of the O., K. C. & E. R. R. The foreman of the mine is John Payton. The equipment of this mine is about the same as No. 2.

I visited this mine on June 20, 1908. At the time the inspection was made the mine was idle, and my visit there was made for the purpose of investigating a piece of long wall work, to see how it remained after the suspension in comparison with the mines working under room and pillar system. There is a difference of opinion among the practical miners as to the merits of both systems in use in this particular field. Mr. R. G. Rombauer wants to give both methods a fair trial, and is opening mine No. 3 on the long wall system for this purpose. I am of the opinion that it is the most feasible plan for this field. It has every advantage, there being no waste of the coal seam and less timber is required.

I inspected this mine again August 20, 1908, and found it to be in excellent condition. The company is still experimenting with the long wall system, and nothing can be said at this time as to the success attained.

AUDRAIN COUNTY.

AUDRAIN COAL COMPANY.

This company operates a coal mine, located on 320 acres of land two miles west of Vandalia, Missouri. The land is owned in fee simple by W. C. Orr. The company is a co-operative affair with thirty members and has been working successfully for several years. The company is capitalized at $10,-

000. The officers are Dr. J. C. Parrish, president; Wm. R. Ralston, vice-president, and George Burge, secretary and treasurer.

The coal seam is reached by a shaft opening 82 feet in depth, and is 28 to 30 inches thick, and is overlaid with a good slate roof. Steam power is used for hoisting and running the fan, which is ten foot in diameter, furnishing a large volume of air divided into two separate currents. The coal is mined on the long wall system.

On the date of my visit, January 9, 1908, all the top structures, machinery, ropes, cages and safety appliances were found to be in good condition. I was unable to make an inspection of the underground working, as the mine had closed down indefinitely.

BEVAN MINE.

Wm. Bevan of Laddonia, Missouri, owns 120 acres of land upon which he operates a coal mine. This mine is located three and one-half miles southeast of Laddonia.

The coal is reached by a gin shaft 35 feet in depth. The long wall system is used in mining the coal. Ventilation is produced by a furnace. I visited this mine on January 9, 1908.

I was sorry to learn that since my last visit Mr. Bevan had died. The burden of managing the farm and mine fell upon Mrs. Bevan, and she has leased the mine to two miners, who will continue to operate it. The mine is small, only employing five or six men in the fall and winter months. The coal is hauled to Laddonia in wagons, where it is sold to private families.

LOUDER AND PETERSON COAL CO.

This company originates from Mexico, Missouri, and owns and operates two mines in this county. One is located near Farber and the other near Vandalia. The mines are sunk on land owned by Hess, Daniels and Schrieffer. The Farber mine is 96 feet deep; the Vandalia mine 84 feet deep. The company is capitalized at $60,000. E. M. Louder, president; C. S. Peterson, vice-president, and Katherine Peterson, secretary. Steam power was in use at the Vandalia mine. At the Farber mine steam power is used for hoisting purposes, and for running the fan, and electricity is used for mining the coal. Ventilation is produced by a ten-foot fan with good results. On January 10, 1908, I was unable to make an inspection of the underground workings. The mine had been leased during the last year to twelve miners. This lease expired a few days before my last visit, and they were unable to secure a renewal, consequently the mine was closed down and 27 men were thrown out of employment.

I made an inspection of the Farber mine on May 22, 1908, owing to a complaint made by one of the miners, stating that the mining laws of the State were being violated. It was charged that impractical men were mining coal in a room by themselves, and boys under age were at work in this mine. I made a thorough investigation and failed to find any infraction of the law. I did, however, find that a great deal of animosity existed between several miners, due to dissatisfaction with the lessees of the mine. In order to even up matters these complaints were made. I found the mine in excellent condition as to ventilation and sanitation.

MISSISSIPPI GLASS COMPANY.

The general offices of this company are located at St. Louis, Missouri; Julius S. Walsh is president; Robert A. B. Walsh, secretary, and J. A. Hodenuck, treasurer.

The company's mine is located at Vandalia, Missouri, fire clay and coal being taken from the same mine. A. Bishop is the foreman over the brick plant and James E. Henngear is underground foreman.

Since my last visit to this mine the entire plant had been destroyed by fire, but the company had rebuilt an excellent new pit tower and buildings for the manufacture of fire brick and furnace tilings. I found the ropes, cages and safety appliances all in good condition. This coal seam and clay is reached by a shaft opening 60 feet in depth and the coal is mined on the long wall system. Underneath the coal is found this clay, which is worked on the room and pillar plan and quite difficult to mine. Timbers of large dimensions, over two feet, are required, as they are squeezed out of alignment in a short time. I made a thorough inspection of this mine January 8, 1908, as I had received complaints from the miners in regard to poor ventilation. Upon investigation I found that the clay miners were using large quantities of powder and were shooting all times of the day, and this smoke was carried by the air to the miners, who were not using any powder. This method proved very unsatisfactory and annoying, and I decided to have the system of ventilation changed so as to give the coal miners the air first. To accomplish this an upcast had to be driven up to the coal mine, then sink a down cast to furnish air to the clay miners, and the air had to be brought up to the coal miners a second time in order that it might return to the shaft bottom, as there was no return out of the claiy mine. This method has proven a decided success.

This company is doing a large business. They manufacture 1,700 fire bricks daily, besides a large amount of furnace tiling. They are mining seven feet of fire clay.

STANDARD COAL COMPANY.

This company is a co-operative concern. Isaac Colleen, president; John Gralson, secretary, and Robert Turnbull, foreman. This organization has been in existence for seven years and has been fairly successful. The mine is located on land owned by Hardin McPike, one-fourth mile south of Vandalia, Missouri.

I made an inspection of this mine on January 9, 1909, and found ventilation and sanitation excellent. Everything in and around the mine was well cared for. The ventilation comes down the main shaft and travels to the face of the main north entry, where it splits to the east and west and returns to the furnace. Coal is mined on the long wall system, and the seam is 28 inches thick, being overlaid with a slate roof. Horse power is used for hoisting purposes. Nearly all of the production is used at Vandalia and the immediate vicinity for domestic purposes.

At the time of this inspection twenty-three men were employed.

BATES COUNTY.

ATLAS COAL AND MINING COMPANY.

This is the old New Home property, and has been leased by Brown and Watson of Rich Hill, Missouri. They are cleaning it up preparatory to operating it. The original company owns 800 acres of coal land and has a mining lease on 300 additional acres.

This mine is located nine miles northwest of Rich Hill, Missouri, and has shipping connections with the Frisco Railroad by a spur switch. This shaft is 270 feet deep. The mine is splendidly equipped as to top structures and machinery, which is of the very best and in good condition. At the request of the lessors, I made a visit to this mine on the 25th day of March, 1908. I found Mr. Brown pumping water into the north side of the mine, to be sure of extinguishing a fire which caused the mine to be closed September 25th, 1908. The lessors intend to develop the south, east and west sides of the mine. I was unable to make an underground inspection of this mine on account of the cages not being replaced and no men working. A new 14-foot fan will be placed instead of the old one that was burned down by an explosion of gas.

BOONE COUNTY.

COLUMBIA COAL COMPANY.

This mine is located on 12 acres of land in the vicinity of Switzler, the land belonging to R. E. Henry. This mine is operated by a partnership composed of four partners. Frank Lofty is superintendent and Perry Cable is foreman. The railroad facilities are by way of spur switch, known as the Centralia branch.

The coal is reached by a shaft opening 130 feet deep. Ventilation is produced by a ten-foot fan, operated by steam power. The plan of working is up-to-date and of a mixed system of long wall and room and pillar plan. The coal will average four feet in thickness and is overlaid with a soapstone and shale roof.

I inspected this mine on June 2, 1908, and found the tipple in need of new braces, which were ordered placed as soon as possible. The machinery, ropes, cages and safety appliances were all in good and safe condition. The current of air is forced down the main shaft partition, which splits at the bottom to the north and south. The air was sufficient on the south side, but was entirely different on the north. In the west entries the air was not sufficient in volume to keep them free from lamp smoke and other gases. The superintendent was endeavoring to get an air course through, which will remedy this defect. Several doors were needed and were ordered to be placed within a period of two weeks.

CLAY COUNTY.

MISSOURI CITY COAL COMPANY.

I was called to this mine on September 22, 1908, on a request from the miners, complaining about poor ventilation. I made a thorough inspection of the whole mine and found all of the top structures, ropes, cages and safety appliances in good condition. I then inspected the underground working and endeavored to find where the ventilation was poor, but failed. I inquired of the committee if they knew, and they informed me it was on the west side. A thorough inspection of this section of the mine failed to reveal the fact that the air was poor. I had a talk with the men who worked in this section of the mine, and none of them had any complaint to make in regard to the quantity and quality of air furnished. After going into the matter thoroughly I found the complaint to have grown out of a dislike for the foreman in charge, and they used this method of having him removed. I found the mine in a very satisfactory condition in every particular, and have no complaint to make.

GRUNDY COUNTY.

TRENTON COAL AND MINING COMPANY.

On August 11, 1908, I inspected the mine belonging to the Trenton Coal and Mining Company, and found it in excellent condition.

HOWARD COUNTY.

PITNEY MINE.

O. S. Pitney owns and operates a small mine three and one-half miles south of Higbee, Missouri. The mine has a slope entrance. The coal is four feet thick and is overlaid with a fairly strong roof. The mine is worked on the pillar and room plan. Ventilation is natural. Horse power is used in bringing the product out of the mine. The coal is hauled in wagons to Higbee, Missouri, supplying the electric light plant and used for domestic purposes.

RUSSELL COAL AND MINING COMPANY.

This company is capitalized at $30,000, and operates a coal mine located on 242 acres of land near Russell Station. The land is owned by John Muir, who is general manager and superintendent, and Luke Sharp is foreman.

The mine has a slope entrance and the coal is pulled up over an incline trestle to a landing, where the coal is dumped into the cars. The coal seam is three and one-half feet thick, overlaid with a very tender soapstone roof. Ventilation is produced by a furnace. The long wall system is practiced in extracting the coal from the face.

I made a thorough inspection of the mine on November 17, 1908, and found that a new air shaft had been sunk at the face of the works, and a good furnace installed. The air was pure and wholesome and permeated every section of the mine. The roads were in good shape. The coal is very soft, with a good many clay slips and water seams. The roof is very soft, requiring a great deal of care to keep it from caving. The product is shipped to Sedalia and other points along the M., K. & T. Ry.

Mr. Muir is a practical miner and deserves credit for his persistency and ability in combating and overcoming so many obstacles in running this mine. Other men would have been ready to quit even under more favorable circumstances.

MORRISON MINE.

R. S. Jackson operates a small mine located near Fayette, Missouri, on 200 acres of land owned by the heirs of John P. Morrison. The entrance to the mine is a drift. The coal is 18 inches thick and overlaid with a slate roof. The coal is pushed out by hand. Ventilation is natural. The entire product is used at Fayette and the immediate vicinity. Examination was made November 14, 1908.

ALEXANDER PITNEY.

Alexander Pitney owns and operates a small drift mine one-half mile south of Russell Station. The coal is of the same vein and is mined and brought to the surface in the same manner as in the other mines in the immediate vicinity.

LAFAYETTE COUNTY.

THE WAVERLY BRICK AND COAL COMPANY.

The officers of this company are: J. R. Tustin, superintendent and general manager, and Francis Ferne, foreman. This is a new company, the mine being located where the old Buckhorn mine used to be. The company owns and controls 2,051 acres of coal, clay and shale lands. After everything is in good working order the plant will have a capacity of manufacturing 150,000 paving and common brick; 50,000 face brick; 50,000 fire brick, and 10,000 vitrified fence posts. The mine will have a capacity of producing 1,000 tons of coal daily. The company owns in fee simple, where the mine is located, 283 acres of the surface land.

I made a visit to this place on October 15, 1908, and was agreeably surprised to notice the improvements made. The old shaft, which was a small affair, had been enlarged to 8x16 feet and was recurbed from top to bottom with white oak timber. A splendid tipple, 66 feet high, was built of the best material, double braced throughout and set on concrete pillars; equipped with shaker screens; the company is enabled to make several grades of coal; self-dumping cages of the latest pattern, equipped with safety catches, were on the ground ready for use; a model fan house with reversible floors; a fourteen-foot fan and engine were in operation. The fan is directly connected with the engine and is up-to-date in every particular; a commodious engine house and boiler rooms; first class hoisting engine of the geared type, laid on good cement foundations, are ready.

Ties have been laid for the switch connection with the Missouri Pacific railroad. The coal is reached by a shaft 145 feet deep, and is four feet in thickness, overlaid with a good roof. The shaft bottom was not completed. At this time there were no coal miners employed. This new coal field will materially help Lafayette county in forging to the front as a coal producing county.

LABOR EXCHANGE MINE.

This mine is located one and one-half miles west of Wellington on 5 acres of land owned by Labor Exchange No. 305. The officers are Patrick McNally, president; A. J. Blair, manager, and Frank Moutine, foreman.

The coal is reached through a shaft opening 93 feet deep and cuts a coal seam of 18 inches, which is overlaid with a fine lime rock roof. Steam power is used for hoisting purposes. Ventilation is produced by a six-foot fan, and long wall system is used in mining coal.

I inspected this mine on September 22, 1908, and found the mine in a satisfactory condition as to ventilation, but the sanitary conditions were not of the best. The management is troubled with a great quantity of surface water, which keeps the roads in a sloppy condition. Suggestions were given as to the best methods of caring for the water accumulating in the mine.

DAISY MINE.

Lanning and Harris Coal and Grain Company of Kansas City, capitalized for $112,600, operate this mine. The officers of the company are Charles Nusbaum, president; L. D. Lanning, secretary, and H. Harris, treasurer and general manager. James Bailey is foreman of the mine. The company owns thirty acres in fee in the vicinity of Wellington, upon which it operates its mine.

The entrance to the mine is a drift opening. The coal seam is eighteen inches in thickness and is overlaid with slate and limestone roof, which is ideal in every respect. Electric power is used in operating the five mining machines of the Goodman pattern. The long wall system is practiced in developing this mine.

I was called to this mine on September 23, 1908, in regard to poor ventilation being furnished the miners. Upon close investigation I discovered that the fan was discharging the air into the empty roadway, and a board partition allowed at least one-half of the current to escape through the loaded track and a leaky door before entering the mine one hundred yards. I ordered the company to erect two good air tight doors on the full track to prevent the air from escaping, and to extend the intake partition and place a double door on the intake, so that when one door would be open the other would be closed. This being done, no further complaint was made.

LINN COUNTY.

BARR MINE.

Charles Barr has leased the old Shaffer mine, located two miles east of Brookfield. The coal is reached by a shaft opening 155 feet in depth. Coal is 26 inches thick, and is overlaid with a good shale roof. Horse power is used for hoisting and a furnace supplies ventilation.

I inspected this mine on September 14, 1908, and noted some improvements on the top structures. The hoisting gin had been thoroughly overhauled with new timber of substantial size; the curbing in the shaft had also received some attention. The underground conditions were not satisfactory. Ventilation was very poor, being scarcely noticeable on the working face, and what air was in the mine was allowed to escape from the men through improper canvassing of the roads, the air taking a short cut to the escape shaft. I found the air course to the air shaft nearly completely cut off, and what little air got through was screened through falls of rock.

The company was given ten days in which to clean up this air course and have it in shape for travel to the air shaft in case of necessity.

The production of the mine is hauled to Brookfield in wagons and used for domestic purposes. The miners are paid $1.50 per ton for digging, pushing the coal to the bottom and placing it on the cage.

BUCKLIN COAL AND MINING COMPANY.

The officers of the company are: F. C. Shumaker, president; J. C. Lawson, treasurer; G. T. Bell, secretary; Thomas Mordeca, foreman.

This mine is located near the western limits of the town of Bucklin, close to the main track of the C., B. and Q. R. R.

The coal is reached by a shaft opening 230 feet in depth. The present shaft was sunk as a prospect shaft and will be used later as an air shaft. It is the intention of the company to sink a main shaft this summer, after which permanent buildings and top structures will be built and machinery will be installed.

I made an inspection of this mine on March 10, 1908, and found the small friction engine that was used for sinking purposes still doing service for hoisting coal and men. I found the rope only seven-eighths of an inch in diameter and in a dangerous condition. I, therefore, ordered that the men be hoisted out of the mine one at a time, and closed the mine down until an engine of greater power and ropes of adequate strength, to insure the lives of the miners, had been secured.

I found the underground workings of the mine in a satisfactory condition. The mine is opened up on the long wall plan; main entries running to the east and west with cross entries to the north and south. Ventilation is produced by a small fan placed on the partition of the shaft. This is the same strata of coal that is mined at Marceline, which is from 28 to 30 inches thick, overlaid with a good strong shale roof. At this visit 10 men were employed.

CRANDALL MINE.

D. L. and W. E. Crandall have leased and are operating the old Burdell mine, located one and one-half miles east of Brookfield, on two acres of land owned by H. D. Burdell.

The mine is entered by a shaft opening, 140 feet in depth, which reaches a coal seam of 26 inches. Horse power is used for hoisting, and the coal is mined on the long wall plan. Ventilation is by furnace, with satisfactory results.

I made an inspection of this mine on September 13, 1908, and found the equipment in very good condition. The guides in the shaft were badly out of alignment, and the cages were catching in places in the curbing. This was ordered remedied at once, which Mr. Crandall promised to do. I found the underground workings in very good condition. Ventilation was good all along the working face. Air courses were open from the intake to the outlet.

These small mines are very difficult to keep in good condition because they are worked during the fall and winter months only, and during the warm weather are closed down and not given the attention necessary. When reopened in the fall, a general clean up is necessary. The entire output is sold in and around Brookfield.

LANDRETH & SONS.

Landreth Coal Company owns and operates a coal mine one mile west of Marceline, on 80 acres of land owned by R. F. Landreth. The coal seam, which is 28 inches thick and overlaid with shale, is reached by a shaft 130 feet deep. Steam power is used for hoisting and for fan ventilation, the fan being ten feet in diameter. The mine is worked on the long wall plan. I visited this mine on March 14, 1908, and found everything in good shape. New sheds for storing coal and new chutes were the principal improvements noticed. The mine is not operated in the summer time. The coal is consumed at Marceline by private families. A second visit to this mine was made on June 27th, but it was closed down, so an inspection was impossible.

MARCELINE COAL & MINING COMPANY.

This company is capitalized for $30,000. The officers are L. C. Jackson, president; G. T. Walker, vice-president and treasurer; C. P. A. Clenger, secretary; James Hemmings, superintendent.

The company owns 65 acres of land and controls under lease 650 acres near Marceline, upon which two veins are operated, with steam power and fan ventilation. A switch from the A., T. & S. F. R. R. provides shipping facilities.

MINE NO. 1.

The coal seam averages 27 inches and the long wall method of mining is employed. I inspected this mine on March 12, 1908. The top structures were in ordinary repair. The cages, which were supplied with new safety catches, were all in excellent condition. The fan, all machinery and underground workings were in fine shape. There was an abundance of air in every part of the mine. I found the entire working face open, something very unusual for a long wall mine with so much excavated territory. The ventilation has been greatly improved since my last visit.

I was called to this mine by the miners of Marceline, who complained about the ventilation being poor in certain sections of the mine. I visited the mine on June 25, 1908, making a thorough inspection of same. On this visit I found the air very poor in certain sections, and the mine was loaded with damps in the places complained of. A great many doors and curtains were needed to keep the air to the face. There was plenty of air in the mine if it had not been allowed to escape. The mine had sustained considerable damage during suspension, pending adoption of a new wage scale. Orders were given to clean up where falls had occurred and one week was granted in which to improve the ventilation. I recommended that a new fan be installed and placed in a position to do more effective work. On date of visit 196 men were employed in this mine.

MINE NO. 2.

Is reached through a shaft 212 feet deep. The coal varies in thickness from 26 inches to 4 feet, and is overlaid with a soft shale roof. The mine is worked on the long wall plan, and the coal is shot off the solid. Ventilation is produced by a fan, but found same poorly supplying mine. I followed the current of air to where I thought it should split, but failed to find presence of air at this point. An examination revealed the fact that from the first entry north to the head of the first entry south six or seven rooms had caved in, and some of these rooms had been in this condition for over a month. There was no air in that section of the mine where coal was shot off the solid, the men having allowed the arch to cave in, and in many cases no attempt was made to re-open same. I investigated this matter thoroughly and directed the attention of the company to this neglect.

Any miner who continually allows his working place to be closed in, thus preventing proper ventilation, which naturally makes it impossible for his fellow-workmen to work and make a living, is not worthy of a place in a mine, and should be discharged. And any foreman who knowingly and negligently allows such a condition to exist is incompetent to fill the responsible position he holds. Under conditions such as I found in this mine, it would be impossible to keep the ventilation up to the standard, and I ordered all of the closed-in places reopened as quickly as possible. I informed the management that unless this order was complied with at once I would take out all men affected. In a part of the mine the ventilation was quite sufficient.

I made a second inspection of this mine on June 26, 1908, and found the mine greatly improved in ventilation. A new air course to the shaft was nearly completed, which, I believe, will benefit the whole mine. At time of visit 163 men were employed.

H. F. WINE MINE.

H. F. Wine owns and operates a coal mine located on 120 acres of land two miles northeast of Brookfield. The coal is reached by a shaft 151 feet deep, and the coal seam is 29 inches thick, overlaid with a good shale roof. Horse power is used for hoisting purposes. The coal is worked on the long wall system, and ventilation in the mine is by furnace. I visited this mine September 15, 1908, and found only five men at work. Coal is hauled to Brookfield, where it is used for domestic purposes.

WILLIAMSON MINE.

L. P. Williamson operates a coal mine one and one-half miles southeast of Brookfield, on 37 acres of land owned by Mr. Rowell. The coal is reached through a shaft opening, 145 feet deep, the seam averaging 26 inches in thickness, overlaid with a good quality of shale roof. Horse power is used for hoisting purposes. The ventilation is secured by a furnace. Long wall is the system of mining the coal.

I made an inspection of the mine on September 16, 1908. Very little attention is given this mine except in the fall of the year, when coal is in demand. I found the ventilation very weak on the west side of the mine. The air course on this side has been lost entirely. I noticed that the shaft bottom is squeezing until it is very low. Found the air course to the air shaft caved in with rocks hanging loose its entire length. In case of an accident to the main shaft this is the only avenue of escape. I found this too dangerous for the men to travel, and gave instructions to have it thoroughly cleaned and put in good shape. Found the bridle chains on the cages and safety catches rusty and out of repair, with common nails doing service for spread pins.

It seems that men's lives are of no consequence in this mine, or some steps would be taken for protection. In view of this condition, I was compelled to close down the mine until placed in a safe condition.

The product is hauled to Brookfield, where it is used for all purposes. At this visit, 15 men were employed.

MACON COUNTY.

CENTRAL COAL AND COKE COMPANY.

This company owns and controls six mines in this county, embracing several thousand acres of coal lands. The company is capitalized at $7,000,000. The officers are: C. S. Keith, president; F. E. Doubleday, vice-president and general manager, and John S. Davis, general superintendent. The mines are known as Nos. 61, 66, 24, 25, 28 and 10.

Mine No. 61 is located two and one-half miles south of Bevier, near Keota, Mo., on 600 acres of land. Switch connections are with the Missouri and Louisiana railroad, and this road delivers the coal to the C., B. & Q. railway at Bevier.

This mine is equipped with modern machinery, good tipple, and a commodious engine house and boiler room. A large dynamo supplies power for electric haulage; two six-ton motors bring the product to the mine bottom. The coal is hoisted from a shaft 125 feet deep. The coal seam averages four and one-half feet in thickness, being overlaid with a soapstone, sand rock and slate roof.

I made a thorough inspection of this mine on February 11, 12 and 13, 1908, and found the top structures, machinery, ropes, cages and safety appliances in good condition.

Ventilation is produced by a 15-foot fan, which forces a tremendous current of air into the mine, but owing to the vast territory excavated, and the long distance which the air must travel before it reaches the working face, encountering damps on its course through the mine, it is rendered weak in many places. My last visit was very unsatisfactory. Following the first split to the south on the west side, I found this air course caved in to such an extent that it was with difficulty that I got through. This current ventilates two pair of west entries and several pair of branch south entries. The air in the first two pair of west entries was very good, but the fifth and sixth entries west were in very poor condition. The air was so weak that it could not be measured. The quality at this point was very good, but little or no quantity.

This same condition existed in other parts of the mine, little or no attention having been paid to air courses. Falls of rock had been allowed to accumulate until the area was so contracted that the volume fails to reach the men in the quantity required. I found the doors, with very few exceptions, in a very deplorable shape, and not rendering the services for which they were intended. Some of them were out of adjustment, not closing within several inches of where they should; some would drag along the rails and not close; others had large holes in them, which allowed the air to escape. Such carelessness as this is inexcusable. I found as high as three open cross-cuts where there should have been but one. The cross-cuts all over the mine were driven so narrow that the capacity would not furnish air enough for a dozen men. Whenever a miner becomes so selfish that he drives a cross-cut just large enough for his own special use, it is time that the mine foreman sees to it that it is large enough to furnish ventilation for all men in that pair of entries. Several of the cross-cuts were scarcely three and one-half feet wide, and generally used for a storage place for timber, tool boxes, powder kegs and miners' tools of various descriptions. With such carelessness, no wonder no more air is furnished. Some foremen encourage their men to drive small cross-cuts because they are easier filled.

An air shaft at the head of the shaft was recommended for more than two years, and I am glad to say that it is not the company's fault that the request has not been complied with, for the reason that the owner of the land refuses to sell this strip of land unless the company will purchase the entire farm of several hundred acres. As soon as they drive the second south entry on the east side a few hundred feet farther, they will be on their own territory, and then the company will sink the air shaft. The management promised to remedy the defects of the mine at once. At this visit 251 miners, 50 day men, 37 drivers, 22 top men and 44 mules were at work.

I made another inspection of this extensive mine on October 6, 1908, and found the new air shaft sunk. I visited the mine the following Sunday to see the effect of the change, and found that all damp had been removed, and that the ventilation had been wonderfully improved. This new air shaft has been needed for a long time. I do not look for any further trouble along this line. The management is exerting every effort to get the mine in first class condition.

Mine No. 10 is located one mile southeast of Bevier, on a tract of land of 240 acres, 80 acres being owned by the company and the remaining 160 acres are leased from the heirs of the late John Richards.

The equipment of this mine is first class. The coal is reached by a shaft opening 137 feet deep. Ventilation is by a 12-foot fan. The room and pillar system is employed, and the coal is shot off the solid.

I made an inspection of this mine on February 21, 1908, and found all of the top structures, ropes and safety appliances in good shape. The cages were out of repair, and the foreman was requested to have this looked after at once, which he promised to do. I found on this visit that No. 10, like a great many other large mines in this field, is fast drawing to a close in production. I found only two pair of entries, and these will not last very long. This will throw quite a number of men out of employment, and a great many of them will sadly miss the old "Rock-quarry," as the mine was familiarly known. This was the nearest mine to the town, and as time rolls on, the mines are being located farther away. This leaves but two mines within walking distance of Bevier, and in the near future the miners here will be compelled to have means of transportation to their work.

The ventilation and sanitation of the mine was as good as could be expected. The works are continually breaking through into the old abandoned works, and this causes damps which demand constant attention. The air in the 7th and 8th east entries was weak and not of sufficient volume. I ordered the cross-cuts improved and the leakage stopped between entries. Forty-three miners, 13 day men, 10 drivers, 7 top men and 12 mules were at work.

Mine No. 24 is located two and one-half miles north of Ardmore. Transportation facilities are with the M. & L., connecting with the C., B. & Q. at Bevier. Equipment of the mine is first class. Good tipple and top house; commodious engine house, boiler room and blacksmith shop. The machinery is of the best, including a Litchfield first motion engine, which hoists the coal out of a shaft 124 feet deep. The coal averages four and one-half to five feet in thickness. Ventilation is produced by a 14-foot fan.

I made an inspection of this mine on January 29, 1908, and found all of the top structures, ropes, cages and safety appliances in good condition. I made a thorough inspection of the top and underworkings of the mine. The air splits at the bottom of the downcast to the east and west. Overcasts are built to furnish separate currents of air to each pair of cross entries. This mine was not in a very satisfactory condition as to ventilation. The mine has been on fire for two years or more, and the whole mine running into slate roof, produces black damp, which continually leaks out of abandoned works.

The present volume of air is not strong enough to purify the entries.

The air was very good in the 5th, 6th, 7th, 8th, 9th, 10th, 11th and 12th entries west of the first west. The only remedy to relieve the situation was to sink an air shaft in one section of the mine. The company has nearly completed this new air shaft, being just forty feet from the coal at this writing.

The other part of the mine was in much better shape. The new air shaft will be a benefit to the entire mine. The same trouble was experienced here as in other mines, namely, the use of a worthless patented door. They are merely a subterfuge and a pretense, and the company should get a better door or resort to the use of the old-time doors that did such good service.

At this visit 164 miners, 15 top men, 24 drivers, 34 day men and 26 mules were employed.

Mine No. 28 is located one mile north of Ardmore on a large tract of land owned and leased by the company. Railroad connections are by a spur switch off of M. & L. railroad. The coal is transported to Bevier, the distributing point for this field.

The equipment of this mine is first class; up-to-date tipple, engine and boiler room and blacksmith shop, Wright-Adams engine, self-dumping cages, and safety catches of the latest pattern.

A 12-foot fan supplies the ventilation and a separate compartment in the airshaft, with a splendid stairway for exit, without coming in contact with the great volume of air coming down the air shaft.

I made an inspection of this mine on February 17, 1908, and found Mr. H. Lehman in charge. The mine is opened up to the east and west with cross entries to the north and south. East and west entries will be turned off from these every 300 feet, using the thousand-foot block system.

The split system of ventilation will also be used. The bottom, extending 150 feet in length on each side of the shaft, is well timbered and of extra height. Overcast will be built for every pair of entries.

If the mine will always receive the same care and attention it is now receiving, the Inspector will have no fault to find. At this visit 92 men, 5 drivers, 7 day men, 12 top men and 4 mules were at work in the mine.

I made a second inspection of this mine on August 28, 1908, and found all of the top structures, ropes, cages and safety appliances in good condition.

I found the mine in charge of a different foreman. Mr. Lehman resigned, and was succeeded by Herbert Rogers, formerly foreman of Mine No. 10, owned by the same company.

The underground workings did not have as large a volume of air as should have been furnished with a new 12-foot fan. I discovered that the air shaft was open to the stairway, and that the doorway on the top was open, having the effect of forcing the air to the bottom of the air shaft and returning it up the man-way, causing the air to be very weak at the head of the main west entry. I requested Mr. Rogers to remedy this loss of air, which he promised to do. Having been in charge only a few days, he had not made a thorough inspection of the mine to see what was needed.

The mine is in only fair condition as to sanitation and roadways. However, I expect a decided improvement under the new foreman, owing to his practical knowledge of mining. At this visit 75 men and boys were employed.

Mine No. 25 is located one-third of mile south of Keota, Mo. The coal is reached by a slope entrance. The coal is pulled up over an incline plane to a landing, where the coal is dumped into railroad cars. Steam power is used for hauling the production to the surface and for running the fan. The coal averages from four to four and one-half feet in thickness. The room and pillar system is used in developing the mine. Coal is shot off the solid. Ventilation is produced by a 12-foot fan.

The mine is opened up to the south with cross entries to the east and west. Ventilation is divided by overcasts. The mine is a new one, and is not fully developed. I found the mine, as a whole, in good condition as to ventilation and sanitation. The air courses were clean, with high and wide doors. Haulage roads were all in good shape. The new law requiring all old, abandoned rooms and entries to be closed in thirty days was being strictly enforced. The mine is worked in blocks of a thousand feet each, and when each block is worked out, it can be easily closed up tight, preventing the damps to escape to other parts of the mine. At this visit 150 miners, 19 day men, 18 top men and 16 mules were working in the mine.

I made another visit to this mine on July 24, 1908, and found everything in good condition. Ventilation was abundant in every part of the mine, and the entries fairly well timbered. I was glad to know that the company was preparing to use all entries for the hauling of coal. This method will insure clean air courses and much better ventilation. All abandoned workings were securely closed. The roadways were not as clean and well kept as they should be, but, as a whole, the mine was in a very satisfactory condition.

Mine No. 66 is located near Keota on a tract of land of 580 acres, 500 of which are owned by the company, the other 80 acres being leased. This mine is similar to Mine No. 61, having a large territory worked out. Coal is shipped over the M. & L. to Bevier and transferred there to the C., B. & Q. railroad.

The shaft opening is 57 feet deep, and the coal has an average thickness of four and one-half feet, overlaid with soapstone, sandrock and slate roof. The equipment of the mine is up-to-date in every particular, and is provided with every facility for rapid and economical handling of the production. A thorough inspection was made on January 20, 1908, and all the top structures, machinery, ropes, cages and safety appliances were found to be in good condition.

Ventilation is produced by a 14-foot fan. The current of air is split at the bottom of the air shaft to the east and west. The west side of the mine is nearly worked out, and very few men were at work on this side. Everything was in good shape, and plenty of air was furnished the small number of men working here. The ventilation on the east side was improved since my last visit. The foreman has driven a run-around from the air course to the main entry, and has placed a double door far enough apart to hold a trip of cars. This prevents a great leakage of air that formerly occurred at this point. Several old doors between the entries have been replaced by good, tight stoppings. This has increased the volume of air greatly in several of the entries. There are overcasts for each pair of entries, but the fan does not supply sufficient air under present conditions for the great amount of territory worked. I found the air weak in the 15th, 16th, 17th and 18th entries east off of the first entry south, and recommended to sink an air shaft at the face of the workings for an upcast. This, I believe, would remedy the defect.

This mine is troubled with surface water, which keeps the roads in a sloppy condition. The foreman, Isaac Rice, has improved the conditions very much since my former visit. Cross-cuts are still given too little attention; they are too small and are allowed to become filled with timber, rock, tool boxes and tools, when they are driven for the express purpose of carrying air.

At this visit 148 miners, 14 top men, 26 drivers, 37 day men and 33 mules were at work in the mine.

SECOND INSPECTION.

MINE NO. 66.

Central Coal and Coke Company. Isaac Rice, foreman.

I made a thorough inspection of this mine on July 26, 1908, and found all the top structures, machinery, ropes, cages and safety appliances in good condition. I was called to this mine by the miners to examine and test the scales as to their correctness. Accompanied by the pit committee, the scales were thoroughly tested, to the satisfaction of the committee, and found to be absolutely correct.

I made a very close inspection of the underground workings, traveling every pair of cross entries as well as main entries. I found a large volume of air forced into this side of the mine. In following the ventilation to the working faces of the various cross entries, I found that the air was impeded and blocked in every pair of cross entries by small and deficient cross-cuts, which were filled with dirt, old rails, timber of all descriptions, tool boxes, empty powder kegs, until there was no room left for the air to travel. These very same persons are the ones who criticise the Mine Inspector for being derelict in the discharge of his duties.

There should be a law enacted punishing persons for allowing debris of any kind to accumulate in the last cross-cut, whether owner, operator or miner, for no mine foreman can keep air in the mine with all the cross-cuts filled up. I found the roads very sloppy; nothing but mud and water on the east side. A great quantity of water is continually flowing into the mine from this service. It seems that this water could be controlled to prevent its reaching the haulage roads, which impedes the progress of the drivers and makes it disagreeable for miners who have to wade through. There are two men employed in this mine whose sole duty it is to look after the ventilation, and with this precaution there should be no trouble along this line.

GRONOWAY MINES.

Daniel Gronoway owns and operates a mine on 100 acres of land located one and one-half miles southwest of Macon City. In 1905 Mr. Gronoway sank a shaft 127 feet deep, passing through two seams of coal, the upper being 22 inches and the other 26 inches in thickness. He worked this lower vein until the fall of 1907, when he abandoned it, owing to the expense of hoisting the coal through the shaft. He has drifted into the side of the hill, one and one-half miles southwest of this place, and is working the upper vein of coal on the long wall system, having a track face. The coal is overlaid with a good slate roof.

On date of this inspection, May 8, 1908, 4 men were at work. The production is used to supply the electric plant of Macon City.

HELMIT MINING COMPANY.

This mine is located at Lingo, Macon county, Mo., at which point the local office is situated. General offices are located at Kansas City. This company owns in fee 600 acres of coal land, and is capitalized for $25,000. The officers are Chas. W. Armour, president; E. Hirsch, secretary and treasurer; D. Fennell, superintendent; Henry Rusher, foreman.

The coal seam, minus the bench rock, averages about 36 inches in thickness, and is reached by a shaft opening of 130 feet deep. Ventilation is by a 12-foot fan, operated by a gasoline engine of 12-horse power, making 90 revolutions per minute. The long wall system is practiced in mining the coal, but it is shot off the solid.

I made an inspection of this mine on March 10th, and found all of the top structures, machinery, ropes, safety appliances in good condition. One of the cages was not in the best of shape. A new one was being constructed, and would be completed in a very few days, which was intended to replace the old and unsafe one. On date of former inspection I ordered the fan removed from the lower air shaft to the upper one, much nearer to the face of the workings. This order was quickly complied with and under many difficulties. Steam pipes were laid from the engine house, but the distance was so great that the steam condensed before it reached its destination.

This plan was abandoned and a 12-horse power gasoline engine was installed with the best of results. This is the first time I have found the volume of air great enough to keep the mine in a reasonably cool condition. The current at this visit was so great that it was difficult to carry a light. The miners were all pleased, and every man was enabled to work his best with comfort and satisfaction. The problems dealt with in this mine have been written up in all our previous reports, and it is useless to reiterate them.

I found on date of March 10, 1908, a new foreman, Henry Rusher, and was pleased to note the improved condition of the mine under his management. All of my requests have been carried out. Found double doors on the main entry, where they were requested to be placed. The face open, and no cave-ins or tight places. The air splits, allowing about 30 men to each division. Found doors and brattices all in good condition. At this visit 65 miners, 5 drivers, 7 day men and 7 top men were employed.

ISAACSON & UNDERWOOD MINE.

This firm owns and operates a small coal mine on 20 acres of land owned by Charles Brammer. The coal is reached by a shaft opening 64 feet deep. Ventilation is produced by a furnace. The coal is five feet in thickness, and is overlaid with a soapstone roof. Horse power is used for hoisting purposes. Six miners were employed. The coal is hauled in wagons to Callao and surrounding country, and used by private families. This mine is located three and one-half miles west of Bevier, Mo. Date of visit, November 26, 1908.

NORTHWESTERN COAL AND MINING COMPANY.

This company is one of the largest in the State, owns 850 acres of coal land in Macon county, and is capitalized for $150,000. The officers of the company are: J. H. Bovard, president; S. B. Ladd, vice-president; C. G. Thurston, secretary and treasurer. The officers at the mines are: Louis Larson, superintendent; E. Simpson, foreman of Mine No. 8; Perry Aldridge, foreman of Mine No. 9.

Both mines are in active operation, No. 8 being located one mile south of Bevier, and No. 9 is located three-quarters of a mile southeast of Mine No. 8. Both mines are connected by a spur switch more than a mile in length from the Missouri & Louisiana railroad, which in turn delivers the shipments to the C., B. & Q. railroad at Bevier.

Mine No. 8 was inspected by me on February 13, 1908. The equipments are up-to-date in every particular, and every care is taken to keep same so. I found all the top structures, machinery, ropes and safety appliances in good order. I found mine in excellent condition, with the exception of two doors needed on the main and dark south entries. Mr. Ed Simpson advised me that these doors would be installed the very next day. I am glad to say that the operators of this mine do not tolerate negligence in anything in which the welfare of employes are concerned in or about their property. At this visit 250 men and boys were at work.

I made a second inspection of this mine on September 26, 1908, and found it in the usual good order. Nothing is allowed to get out of repair and remain that way very long under the management of this company. The foremen are men who manage and direct the underground work by going into the mine eight hours every day, and seeing that the whole mine is being properly cared for. They do not attempt to manage the mine from the surface. I found the ventilation and sanitary conditions good everywhere, notwithstanding that a mine fire had broken out in a pair of south entries of the second east, in a section of the mine where the covering over the coal is very hard to control, owing to the slate roof. Under these conditions the roof disintregates from the heat, and the fire is given vent despite the usual stoppings. Found all of the entries timbered in good shape. Roads were also clean and well taken care of.

Mine No. 9. This mine is equipped in up-to-date manner with a good tower, a commodious engine house and a first-motion Litchfield hoisting engine. I found all top appliances in good condition. Ventilation is produced by a 14-foot fan. The air is split to the east and west until it reaches the main north and south entries. The split air system is practiced here. From these two main entries the air is divided into eight different or separate currents, and each division of air ventilates as many individual sections of the mine. I found this mine in splendid condition. All entries in this mine are used for hauling coal through to the shaft bottom. This method insures the best of results.

I was pleased to note that the new law requiring all old abandoned rooms and entries to be filled in within 30 days was being rigidly complied with.

All entries were well timbered, roads well corduroyed and in excellent shape, and the doors well hung and in good condition.

On a former visit I noticed that the fan was not running regular, and upon investigation found that the journal was bent, causing the fan to run irregular, and could not be speeded as desired. I took the matter up with Mr. Bovard. He told me he was going to install a new fan of adequate capacity in April. This was satisfactory to the Inspector. The coal in this mine averages from two and one-half to four and one-half feet in thickness, overlaid with a sand and soapstone roof.

On date of visit 250 miners, 30 day men and 10 top men were employed.

I made another inspection of this mine on July 29, 1908, and found all the top structures, machinery, ropes, cages and all safety appliances in the very best condition. A new 14-foot fan had been built to replace the old one, which was very unsatisfactory. The foundation for the engine and fan bearings are built of concrete. The engine is built on a level with the fan journals and rests on concrete pillars. This reduces the vibrations to a minimum, and the fan runs as smoothly as a watch, giving excellent results.

I found the underground workings given every attention possible. All of the entries are wide and well timbered, and, above everything else, they are kept clean. No rock or debris are allowed to find a resting place in the entries along the haulage roads. The practice of allowing drivers, day men and miners to pile up every fall of rock that occurs along the roads, in some mines almost makes it impossible to move cars in or out of the mine. The foreman who tolerates this practice soon finds the production of his mine on the decline, and the work of clearing up the accumulated rock becomes too great and expensive to undertake, thus compelling drivers to wrestle with the cars all day long, week in and week out.

There are no abandoned air courses in this mine. All roads are used for hauling purposes. This system insures ample room for the ingress and egress of air. All abandoned rooms and entries were securely filled up on date of inspection.

MENDOTA COAL COMPANY.

The Mendota Coal Company is incorporated under the laws of the state of Maine, and is capitalized for $200,000. The officers of the company are F. H. Ketcham, president and treasurer; H. B. Scott, secretary, and B. H. Johnson, general superintendent. The company owns 1,910 acres of coal land and operates two coal mines near Mendota. The product of the mine is shipped over the C., B. & Q. railroad.

MINE NO. 2.

The coal in this mine is reached through a shaft 69 feet deep. The coal seam is 34 inches thick. Steam power is used in the operation of the mine, and ventilation is produced by a 12-foot fan. The long wall and room and pillar plans have both been adopted in this mine. The underground workings have the appearance of two separate mines. The south side of the mine is worked on the long wall plan, and the east side is worked on the room and pillar plan. The rib is cut and the coal comes down in splendid shape, no powder being used. I found the mine in a splendid condition.

MINE NO. 9.

This is a drift mine located one mile northeast of Mendota. The coal is hauled to a landing by mules and dumped into railroad cars on a spur switch of the C., B. & Q. R. R.

The coal seam is 34 inches thick, and is overlaid with a good slate roof. The coal is worked on the room and pillar plan, and ventilation in the mine is produced by a furnace.

I inspected this mine on December 3, 1908. A large area has been mined, and many faults have been encountered which have greatly interfered with the mathematical calculations and plans of the operators. Narrow entries had to be driven through these faults and the mine opened anew. These changes have also greatly interfered with the ventilation in the mine, the same having become sluggish and vitiated at the face of the workings. I recommended that a new air shaft be sunk on the inside of the faults. This the company agreed to do as quickly as possible. On date of visit thirty-eight miners were employed in the mine.

PUTNAM COUNTY.

MENDOTA COAL COMPANY.

Mines Nos. 7 and 10 are owned by the Mendota Coal Company and are operated by Hardy Medland. The production is handled and sold by the company. The mines are located one-half mile south of the town, and the coal is reached by a drift into the hills. Shipping facilities are by means of a spur switch from the C., B. & Q. R. R. The coal is hauled by mules to the landing at the tipple, where it is dumped into the cars. The coal of this mine is of excellent quality for domestic fuel and finds ready market.

I made an inspection of these two little slopes on December 4, 1908. Ventilation is produced by furnace. The No. 10 slope was just finished, and only four men were at work. No. 7 was in fair condition, and 12 men were employed at the time.

MISSOURI MINING, MANUFACTURING AND MERCANTILE CO.

This company is a reorganization of the Blackbird Coal Company. The officers are C. W. Lane, general superintendent; Wm. Pritchard, mine foreman. The company owns 43 acres of coal land, two and one-half miles northeast of Unionville, and holds a mining lease on 400 acres of coal land. It is the intention of the company to sink one or more new shafts for the purpose of developing this coal field. The mine has a slope entrance. The coal is pulled up over an incline trestle to a landing by a gasoline engine. The coal is 32 inches thick, and overlaid with a slate roof. Work is done on the double entry room and pillar plan. This coal is cut on the rib, wedged down and taken out in excellent shape. Ventilation is produced by a furnace, with fair results. This is one of the finest coal fields in the State.

I made an inspection of this mine on June 4, 1908, and found that the wet weather had caused a curbing in the air shaft to give way. About 35 feet of the shaft, next to the top, had caved in. This accident will suspend work until shaft is cleaned out and retimbered. This company is working a force of 30 men. As soon as the air shaft can be repaired, a fan of ample capacity will be installed. Shipping connections are with the C., B. & Q. railway.

ROGERS COAL COMPANY.

This company is capitalized for $6,000. The officers are John Rogers, president; Jesse Rogers, vice-president, and B. H. Johnston, secretary and treasurer.

The coal mine is located on five acres of land owned in fee by John Rogers. The mine is located one and one-half miles northwest of Mendota. The coal is found by drifting into the bluffs on a level with the low lands. The coal seam is 34 inches thick, and is overlaid with a good slate roof.

Ventilation is produced by a furnace. Horse power is used in hauling the coal to a landing at the tipple, which is a mile from the face of the workings to where the coal is dumped. Part of the mine is worked on the long wall plan and part on the room and pillar system. This coal seam works well under both plans.

A new air shaft has been sunk at the face of the workings, which furnishes abundant fresh air to all parts of the mine. Ventilation and sanitation, good. Thirty men were employed.

RALLS COUNTY.

JACKSON MINE.

Charles Jackson owns and operates a small drift mine two and one-half miles east of Perry, Mo. The coal is taken out by long wall method. Ventilation natural. The product is hauled to the city and used for domestic purposes. Three men were employed on date of visit, November 19, 1908.

BURGER MINE.

John Burger owns and operates a small drift mine two and one-half miles north of Perry. The coal is worked on the long wall plan, and the seam is 26 to 28 inches thick, overlaid with a splendid slate roof. The coal is consumed locally. I inspected mine on November 20, 1908, when three men were employed.

CLARK COAL COMPANY.

Fitzpatrick Brothers own and operate this mine in the Perry coal field. The mine is located one and one-half miles east of Perry. The coal is reached by a shaft opening 61 feet deep, and averages 24 to 28 inches in thickness.

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Horse power is used for hoisting, and ventilation is produced by a 7-foot fan, operated by a two and one-half horse power engine.

The coal is mined on the long wall system, and is overlaid with a good slate roof. No props are used or needed. Blocks of slate are used in building pillars, instead of props. The coal is undermined to a depth of two and a half feet, then it is wedged down. This is caused from a contracted working face.

I made an inspection of this mine on November 18, 1908, and found it in a good, healthy condition. Sixteen men were employed. The entire production is used by the railroad company.

WOODHURST MINE.

Walter Woodhurst operates a drift mine three miles north of Perry. The coal is from 26 to 28 inches in thickness, and is overlaid with a good slate roof. This mine is worked on the long wall plan, and has natural ventilation. The coal is hauled away in wagons from the mine to Perry, and consumed locally for domestic purposes. Three men were working on November 16, 1908, the date of inspection.

TIGH MINING COMPANY.

This is the James Keenan mine, which was later sold to a company of miners, who formed a co-operative society. John Delaney is superintendent; John Tenny, foreman, and Elmer Wells, secretary. The mine is located one and one-half miles east of Perry, and has shipping connections with the St. L. & H. R. R. The coal is 26 to 28 inches thick, and is reached by a shaft opening 65 feet deep. The coal is underlaid with three feet of fire clay and overlaid with a good slate roof.

Horse power is used for hoisting purposes, and a furnace furnishes the ventilation. I made a thorough inspection of the mine on November 19, 1908. A new escapement shaft was sunk according to instructions, but I found that no ladders were installed. I ordered these put in place as soon as possible.

The curbing of the shaft was not in good condition, being badly bulged out in places. This defect was ordered remedied at the earliest possible moment. Ventilation was found good all over the mine. A big fault on the north side of the mine has given the company considerable trouble for over a year. The entire production is used by the St. L. & H. R. R. At this inspection 16 men were employed.

RALLS COUNTY COAL COMPANY.

This company has been operating two coal mines in this field, known as Mines No. 1 and No. 2. Mine No. 1 is now worked out and abandoned. Mine No. 2 is situated two miles east of Perry.

J. T. Seaton is owner and general manager. Switch connections are with the St. L. & H. R. R. The shaft is fifty feet deep. The mine is operated by horse power, and ventilation is produced by a seven-foot fan, propelled by a two and one-half horse power gasoline engine. The long wall system is practiced in extracting the coal from the face. The coal averages 26 inches in thickness, and is underlaid with two feet of fire clay and overlaid with a good slate roof.

I visited this mine on November 18, 1908, and found it in splendid shape as to ventilation and sanitation. I have not had any trouble with these gin mines since they have been equipped with ventilating fans, run with small gasoline engines. At this visit ten men were employed. Most of the product is consumed by the St. L. & H. R. R.

SMALL DRIFT MINES NEAR PERRY.

Josh Griffith, Howard Bros. and Keenan & Phillips own and operate little drift mines near Perry. Ventilation is natural, and mines are operated on the long wall plan. The product is hauled by wagons to Perry, and is consumed locally.

Henry Smith owns and operates a small drift mine one mile north of Perry. Natural ventilation. Coal is mined and taken out in the same manner as in other mines in this vicinity. Two men employed on day of this inspection, November 20, 1908.

Henry Pier owns and operates a drift mine two miles north of Perry. This is the same vein of coal worked in the other drift mines of this section. The ventilation of mine is natural. Two men were employed on date of visit, November 20, 1908.

RANDOLPH COUNTY.

SPARKMAN MINE.

This mine is located two and one-half miles west of Jacksonville. It is a drift mine. Coal is four feet thick, overlaid with a soapstone roof. The room and pillar system is employed in the mining of coal; natural ventilation. The product is consumed at Jacksonville. Two men were employed on date of inspection.

JAMES SPARKMAN MINE.

This is a small drift mine located one and three-quarters mile west of Jacksonville. Entries are drifted in and rooms turned off. The coal is mined on the room and pillar system. The mine is operated only in the fall and winter months. The product is hauled in wagons to Jacksonville, where it is used by private families. Two men were employed on date of inspection.

BUTLER MINE.

C. W. Butler owns and operates a drift mine two miles west of Jacksonville. Same conditions here as in other mines near Jacksonville. Upon inspection the mine was found to be in fair condition. Five men work during the fall and winter months to supply the local demand for coal in this vicinity.

NICKELSON MINE.

John Nickelson owns and operates a mine three and one-half miles southwest of Jacksonville. The coal is mined on the room and pillar plan, and has natural ventilation. The coal is four feet thick, and is overlaid with a soapstone roof. The production is hauled in wagons to Moberly. Two men were employed on date of visit, November 16, 1908.

EAGLE COAL AND MINING COMPANY.

This mine is located two and one-half miles northwest of Moberly, and has switch connections with the Wabash railroad. J. C. Elvin is general manager and Hiram Hyde is foreman.

The shaft is sunk on land owned by the J. T. Smith heirs and embraces 680 acres. The coal is reached by a shaft opening 95 feet deep. Ventilation is produced by a 14-foot fan placed over a partition of the shaft with very unsatisfactory results. The coal measures three feet ten inches in thickness, and is overlaid with a soapstone roof. Work in the mine is on the room and pillar plan.

I made a thorough inspection of the mine on January 10, 1908, and found that it had changed hands again. This is the third change in three years. This mine has given me a great deal of trouble in trying to see to it that it is kept in a safe condition for the men to work in. I have closed it down until a new air shaft is sunk at the head of the works. This new shaft improved the condition considerably, but I wished the fan moved from the partition on the shaft to the air shaft on account of the great distance to carry steam. The management contended that by boarding up the shaft and making an upcast, sufficient air could be supplied. The boarding up of the shaft has proven a disappointment. However, at my last inspection, under the new management, I found the underground workings much improved. I found the foreman devoting his entire time to looking after the mine, and if Mr. Hyde is given proper encouragement and assistance from the management, the mine will lose its non de plume, "Monkey Nest."

The south side of the mine has been abandoned, and the production must come from the north side. I found two pair of east entries and three pair of west entries off of the main north, where the air was none too strong, and I ordered the fan moved over on the air shaft proper. At this visit 65 men and boys were employed.

I made another inspection of this mine on September 1, 1908, and found a new superintendent and foreman; H. M. Gilikson, superintendent, and Perry Cable, foreman. I did not find the mine in a satisfactory condition. While the air in the greater part of the mine was fair, I found some black damp in the 3rd and 4th west entries. The company is preparing to adopt the long wall system of mining the coal. This will benefit the ventilation. Thirty-five miners were employed on date of visit.

WASHINGTON MINE.

John Washington owns and operates a drift mine two miles west of Jacksonville, on the room and pillar plan. Natural ventilation. Coal seam is four feet thick. The product is used for domestic purposes in the immediate vicinity of the mine, and is hauled away in wagons. Two men were employed on date of inspection.

REPORTS OF COAL MINE INSPECTIONS.

BY H. J. HAMIL.

BARTON COUNTY.

CACKLEY MINE.

J. T. Cackley operates a drift on 20 acres of land owned by R. E. Cackley, five miles east of Milford, Mo., on the room and pillar plan. The coal will average 28 inches in thickness.

The product is sold at the mine. Ventilation is by furnace. J. T. Cackley, Milford, Mo., is manager and operator. Date of inspection, August 7, 1908.

DUNCAN MINE.

C. C. Duncan operates a drift coal mine five miles east of Milford, on 185 acres of land located in Barton, Cedar and Dade counties. The plan of working is room and pillar, and the product, which is small, is sold at the mine. The coal seam will average 24 inches in thickness. Ventilation is natural. C. C. Duncan, Milford, Mo., R. F. D. No. 1, is operator and manager. I inspected this mine on August 8, 1908.

TAYLOR MINE.

R. J. Taylor operates a slope east of Milford, on 165 acres of land which he owns. Room and pillar is the plan of working. The coal is undermined and sledged, and the product is sold to farmers at the mine.

The coal seam is about 24 inches in thickness and of good quality. The only thing to prevent this field from being developed is that it is twelve miles from a railroad.

R. J. Taylor, Milford, Mo., route No. 1, is manager. I inspected this mine August 7, 1908.

MOHAWK MINE.

This mine is owned by W. A. Swan of Pittsburg, Kas., and is located three and a half miles south of Arcadia, Kansas. The mine has a shaft entrance and is 48 feet deep. Hoisting is done by steam and ventilation is produced by a furnace.

Shipping connections are with the Kansas City Southern Railway. The mine is operated by W. G. Friedley, Arcadia, Kas. On date of visit, November 24, 1908, I found the mine idle. Part of the machinery had broken down.

CROSS MINE.

J. M. Cross owns 80 acres of land four miles east of Milford, on which he operates a drift on the room and pillar plan. The coal seam is 24 inches thick and is mined and sledged. The product is sold at the mine to farmers in the vicinity. J. M. Cross, Milford, Mo., route No. 1, is manager. Date of inspection, August 6, 1908.

DAVIS COAL COMPANY.

The mine of this company is located one and one-half miles northeast of Fuller, Kas., on 40 acres of land owned by W. L. Miller. The mine is a new one, just opened during the past summer, and is entered by a slope.

The product is hauled over a tramway one-half mile long and dumped in cars on a spur switch from the Frisco Railroad. The mine is operated by the Davis Coal Company. Joe Davis, Mulberry, Kas., manager.

At date of examination I found the mine in good condition and well ventilated by a furnace. Date of inspection, November 24, 1908.

IMPERIAL COAL COMPANY.

The mine of the company is located five miles southeast of Arcadia, Kas., on 160 acres of land owned by Haller Brothers. The mine has a shaft entrance 35 feet deep. Hoisting is done by steam, and ventilation is produced by a furnace.

Room and pillar is the plan of working, and the coal is blasted off the solid. The coal seam will average 30 inches in thickness. The mine has shipping connections with the Kansas City Southern Railway by a switch. The underground haulage is by mule.

I examined this mine on November 24, 1908, and found same in good condition. F. A. Chambers, Arcadia, Kas., is manager.

CUCKOO MINE.

This mine is located on 20 acres of land owned by the Sheridan Coal Company. The mine was formerly operated by Joe Davis, but at present is operated by J. T. Hembree of Fuller, Kas.

Entrance is through a shaft 30 feet deep. Hoisting is done by steam, and ventilation is produced by a furnace. Room and pillar is the plan of working, and the coal is blasted off the solid. The coal seam will average 34 inches.

Shipping connections with the Kansas City Southern Railway. The mine is just across the line from Fuller, Kas. I examined same on November 25, 1908, and found conditions good.

PERRY MINE.

A. J. Perry operates a slope five miles east of Milford, on 40 acres of land which he owns. It is operated on the room and pillar plan. The product is all sold to farmers at the mine. The coal seam is 28 inches thick. Date of inspection, August 1, 1908.

LAWRENCE MINE.

Frank Lawrence operates a drift mine one and one-half miles south of Milford, on 20 acres of land which he owns. The coal seam will average 20 inches. Room and pillar is the plan of working, and the product is sold at the mines. I visited the mine August 8, 1908.

MULKINS MINE.

S. E. Mulkins operates a drift four and a half miles northeast of Milford, on 165 acres of land owned by Mrs. A. E. Divine. The plan of working is room and pillar, and the coal is undermined and sledged. The product is sold at the mine to farmers. The coal seam will average 34 inches. Date of inspection, August 8, 1908.

WEAR COAL COMPANY.

The mine of this company is located west of Mindon, on 320 acres of land owned by the Hill estate. The entrance is by shaft; hoisting is done by steam, and ventilation is produced by a fan. The mine is operated by the Wear Coal Company of Pittsburg, Kansas.

Shipping facilities are with the Missouri Pacific Railway. Operated on the room and pillar plan; the coal is blasted off the solid. On date of visit, November 12, 1908, I found the mine idle, and no examination was made of the underground workings. Phil Roser of Pittsburg, Kansas, is superintendent and manager, and John C. Davis is foreman.

STONE MINE.

Located five miles east of Milford, on 60 acres of land owned by C. S. Stone. The entrance to the mine is by drift; worked on the room and pillar plan; the coal is mined and sledged. The seam will average 24 inches and is of splendid quality. The roof is first-class and would work on the long wall plan if miners and operators knew their business; but the long wall system is not known in this section.

The product of the mine is consumed in the vicinity of the mine. All mines near Milford are twelve miles from the nearest railroad. Date of inspection, August 6, 1908.

W. B. RECTOR MINE.

This is a drift coal mine, located on 20 acres of land near Milford, owned by W. B. Rector, operated on the room and pillar plan. Coal seam will average 30 inches. The product is sold at the mine to farmers. Date of inspection, August 8, 1908.

G. W. RECTOR MINE.

Located on 60 acres of land owned by G. W. Rector, five miles east of Milford. The entrance is by slope. The coal seam will average 24 inches in thickness and is of good quality. It is sold at the mines. The plan is room and pillar, and the coal is mined and sledged.

I believe the long wall plan of working would be better in this field, as the roof is first-class and will stand for years without timbering. The product is sold at the mines to farmers. Date of inspection, August 6, 1908.

PULLEN & SONS COAL COMPANY.

Location of mine two miles northeast of Mindon, on 160 acres of land owned by Timmons & Crinshaw. The mine has a shaft entrance 40 feet deep. Steam power is used, and ventilation is produced by a 10-foot fan.

This mine was formerly operated by the Embree Coal Company, but at date of visit, November 12, 1908, I found it operated by Pullen & Sons Coal Company of Mindon, Mo. The latter company cleaned up the mine from the bottom to the face and has it in fair condition.

Shipping connections are with Missouri Pacific Railway. Room and pillar is the plan of working, and the coal is blasted off the solid.

HALL COAL COMPANY.

Mine No. 9 is located on 36 acres of land owned by the Western Coal Mining Company, one and one-half miles north of Minden. The mine has a slope entrance, and the coal is hauled by means of rope and mule. Room and pillar is the plan of working, and the coal is blasted off the solid.

Shipping facilities are with the Missouri Pacific Railway. The mine is operated by the Hall Coal Co. of Minden Mines, Mo. On date of inspection, November 13, 1908, I found the mine in good condition, and ventilation was produced by a 10-foot fan. T. A. Hall of Windsor, Mo., is manager of the mine.

WESTERN COAL AND MINING CO.

Mine No. 17, located one and one-half miles northwest of Minden Mines, on 320 acres of land owned by the Western Coal Mining Company, who also operate the mine.

The coal seam will average three feet in thickness and is worked on the room and pillar system, the coal being blasted off the solid. This is a new mine, and at date of visit, November 12, 1908, all the top work was not complete.

A switch from the Missouri Pacific is in course of construction. The main shaft is 64 feet deep, and the air shaft is complete and connections are made. Everything in and around the mine is new and up-to-date. What coal has been taken from the mine is dumped in piles until the switch is completed. Hoisting is done by steam, and ventilation is produced by a 12-foot fan. G. B. Gardner is superintendent and L. Cesselman is foreman.

BATES COUNTY.

GOODIN & NEWELL MINE.

This is a strip pit coal mine on the property of the New Home Coal Company, nine miles northwest of Rich Hill. The pit is run during the fall and winter to supply home trade. E. Goodin, Rich Hill, Mo., is manager. Date of inspection, March 26, 1908.

SQUARE DEAL COAL COMPANY.

Located two and a half miles west of Foster, on the land owned by Henry Peigh. The mine is entered by a shaft 35 feet deep. Horse power is used for hoisting, and ventilation is by furnace.

On date of visit, November 18, 1908, the mine had just reached the coal seam, which is three and a half feet in thickness. An air shaft is also sunk down to the coal seam. Henry Peigh is manager of the mine.

SPRAGUE MINE.

Located at Sprague, five miles west of Rich Hill, on 80 acres of land owned by J. E. Conyear. The mine is 50 feet deep and is operated by J. M. Duzan of Sprague, Mo. The plan of working is room and pillar, and the coal is blasted off the solid.

Steam and horse power are used—steam for pumping and horse power for hoisting. The coal seam is 34 inches thick, of good quality, and finds a ready market at the mine, where most of the product is sold. I was informed that during the winter months part of the product was hauled to Sprague, a short distance, in wagons, loaded on cars and shipped to points along the railway.

I visited the mine on August 14, 1908, and found everything in good condition, except that there was an abundance of water in the mine.

REESE MINE.

Davis Reese operates a shaft 35 feet deep within the city limits of Rich Hill. Hoisting is done by horse power and ventilation is by furnace. The product of the mine is hauled to town in wagons, loaded on cars and shipped to points north and south.

The shaft is sunk on three acres of land owned by J. T. Pritchard. The plan of working is room and pillar, the coal being blasted off the solid. The coal seam will average four and a half feet. On date of visit, July 31, 1908, I found the mine in good condition and well ventilated.

J. V. TATLEY COAL COMPANY.

This mine is located two miles south of Worland on 80 acres of land owned by John Harris. The mine has a shaft entrance 40 feet deep; steam hoisting, and ventilation is by a 7-foot fan. The plan is the room and pillar system, and the coal is blasted off the solid.

This mine was abandoned for several years, but at present it is being opened up and operated by the J. V. Tatley Coal Co. of Worland, Mo. I found the mine in good condition except that no safety catches were on the cages. I gave instructions to have same placed on cages as soon as possible; also covers on cages.

The product of the mine is shipped via the Kansas City and Southern Railway. The coal seam is 30 inches thick. Date of inspection, November 19, 1908.

SOUTHERN MISSOURI COAL COMPANY.

This company operates two slopes three miles southeast of Rich Hill, on 150 acres of land owned by Ross and Moore. This place was formerly worked by Davis Reese of Rich Hill, Mo.

Steam power is used in the operation of the mine. Shipping facilities are with the Missouri Pacific Railway by way of a spur switch. The plan of working is room and pillar, and the coal is blasted off the solid. The coal seam will average four feet in thickness and is of good quality.

I made an examination of this mine on July 13, 1908, and found the conditions first-class, with all safety appliances in good working order. Two mules haul the coal to the mouth of the slopes and one rope hauls the product of both mines to one tipple.

ATLAS COAL COMPANY.

This company operates a mine nine miles northwest of Rich Hill, on 900 acres of land owned by the New Home Land Company. The mine was formerly operated by the New Home Coal Co.

About 18 months ago the mine took a squeeze on the southeast side and four pair of entries were lost. Then the mine caught fire, which caused the company to abandon same and covered up both main and air shafts to smother the fire. Within a few months an attempt was made to reopen the air shaft, and in the attempt some one threw a match into the mine, causing an explosion of gas, burning the men slightly and destroying the fan and fan house. The New Home Coal Company was unable to open up the property and nothing more was done for over a year.

Then James Brown, James Watson and others organized a company known as the Atlas Coal Company, made an examination of the property and concluded that it was too valuable to be abandoned. An examination of the mine was made. Miners were employed and sent into the mine to clean same up. The entries were retimbered and falls of rock in the roadway were removed.

The air shaft was repaired and a fan 14 feet in diameter was installed. After much labor and money had been expended in timbering and cleaning up, a fire was discovered almost due west of the main shaft and only a few yards away. Still these men were not discouraged. A pump was installed on top and water was pumped into the mine, putting the fire out.

When the place was perfectly cooled, a cement wall was built across the old cross-cut, to prevent further damage by fire, should there be any.

I visited this mine on the 13th of August, and was agreeably surprised to see the splendid condition the mine was in. The fan was drawing the air down the main shaft and at the bottom I found 20,160 cubic feet of air per minute entering the mine; enough for 200 men, and only one-fourth that number were employed. This volume of air is divided again in the center of the workings, and each side of the main south has a fresh current of air. The air returns on the east as close to the old entries as possible. In case of foul air coming from the old workings, it would be taken with the return volume to the air shaft. The west volume returns over an overcast and both return volumes meet near the air shaft, where it is drawn to the surface.

The interior of the mine is in splendid condition and I consider it as safe as any mine in the State. Railroad connections are with the Frisco railway. James B. Watson is president and manager; J. A. Brown, secretary and treasurer; S. R. Campbell, foreman. Preparations are now being made for a rope haulage in the mine.

ARBOGAST MINE.

D. H. Arbogast operates a coal mine near Foster, located on 40 acres of land owned by the Walnut Land and Coal Company. The mine is entered by a shaft 25 feet in depth. Hoisting is done by horse power, and ventilation is natural.

The coal will average 30 inches and is worked on the room and pillar plan. The product is hauled in wagons one-half mile and loaded on cars on a spur track from the Missouri Pacific railway. The conditions in and around the mine were satisfactory on date of visit, April 10, 1908.

CARR COAL COMPANY.

This mine is located one and one-half miles east of Rich Hill, on 110 acres of land owned by Robert Carr, Sr. The entrance to the mine is by shaft 45 feet in depth. Hoisting is done by steam, and ventilation is produced by a fan 12 feet in diameter. The mine has shipping facilities with the Missouri Pacific railway by a switch. Worked on the room and pillar plan; the coal is blasted off the solid.

The coal seam will average four feet. On date of visit, July 30, 1908, the mine was idle, the boiler being under repair. Robert Carr, Sr., is president and manager, and Robert Carr, Jr., is foreman,

GOLD MEDAL MINE.

This mine is located on 265 acres of land owned by the Walnut Land & Coal Company, and has a shaft entrance 85 feet deep. Hoisting is done by steam, and ventilation is produced by a fan 8 feet in diameter.

The mine has been closed down for some time for causes unknown to the writer. At present it is being operated by the Clark-Heckadon Coal Mining Company.

The plan of working is room and pillar, and the coal is blasted off the solid. The product is hauled from the mine in wagons and loaded on cars on a spur switch from the Missouri Pacific railway.

Instructions were given for two new openings within one year. On date of visit, November 17, 1908, I found the mine idle and no examination was made underground. W. T. Clark of Foster, Mo., is manager.

DUNKERLY COAL COMPANY.

The mine of this company is located 2 1-4 miles south of Worland, on 80 acers of land owned by Charles Horton. The mine has a shaft entrance and is 40 feet deep. Horse power is used for hoisting, and ventilation is produced by a furnace.

The product of the mine is shipped via Kansas City Southern Railway. Worked on the room and pillar plan; the coal is blasted off the solid. The coal seam is 30 inches thick. The mine is operated by the Dunkerly Coal Co., James Dunkerly, manager, Worland, Mo. Inspected November 19, 1908, and found ropes, cages and safety catches in good condition.

ENGLES MINE.

J. T. Engles operates a shaft 38 feet deep within the city limits of Rich Hill. Mr. Engles owns 40 acres of land on which the mine is located.

Horse power is used in operation. The product is hauled to town in wagons and loaded on cars on a spur track from the Missouri Pacific Railway. The plan of working is room and pillar, and the coal is blasted off the solid. The coal seam will average 5 feet in thickness. On date of inspection, June 20, 1908, the mine was in good condition, with all safety appliances in good shape.

HEATHERLY & SONS MINE.

The mine is located west of Worland, one mile, on land owned by Joe Franklin; the tract contains 80 acres. The mine is entered by a shaft 30 feet in depth, and is operated by Heatherly & Son, Worland, Mo.

Hoisting is done by horse power, and ventilation is produced by a furnace. Room and pillar is the plan of working and the coal is blasted off the solid. The product is sold at the mine. I inspected the mine November 19, 1908, and found same in good condition. S. Heatherly is manager.

HOLLAND COAL COMPANY MINE.

Located nine miles west of Rich Hill on 160 acres of land owned by Holland Brothers. The mine has a shaft entrance 45 feet in depth. Hoisting is done by horse power, and ventilation is produced by a furnace.

The plan of working is room and pillar, and the coal is blasted off the solid. I visited and examined this mine on August 14, 1908, and found the air a little sluggish all over the mine. I gave instructions to have same improved at once. The coal seam is 32 inches thick, and the coal is of good quality.

The ropes, cages, safety catches and scales all were in good condition. Shipping facilities are with the Frisco railway by a spur switch. The product is sold in Kansas and Missouri. The mine is operated by the Holland Coal Co. J. G. Holland is president; O. T. Holland is superintendent and manager, and Fred Putnam is foreman.

HUGHES MINE.

This mine is located south of Foster, on land owned by the Walnut Land & Coal Co., and is entered by a slope. The mine was formerly operated by D. L. Hughes, but at present it is operated by Hughes & Havely of Foster, Mo. I inspected same on November 17, 1908, and found the mine in good condition and up to requirements of the law.

JONES COAL COMPANY MINE.

This mine is located three and a half miles northwest of Rich Hill, on 120 acres of land owned by W. H. Louder. This is a new mine, sunk during the fall of 1907, a short distance east of the old shaft. The new shaft is 30 feet in depth. The old pit and fixtures were removed from the old mine and erected at the new one.

Hoisting is done by horse power, and ventilation is produced by a furnace. Coal will average 4 1-2 feet in thickness, and work is done on the room and pillar plan. The coal is blasted off the solid and hauled over a tramway 500 feet long and dumped into cars on a spur track from the Missouri Pacific railway.

I visited this mine on March 25, 1908, and found the underground workings in excellent condition. Mr. Jones was instructed to put on gates at the entrance to the shaft. J. Elmer Jones is manager, and James Ryan, foreman.

SUNDERWIRTH MINE.

G. W. Sunderwirth operates a strip pit 7 miles west of Rockville, Mo., on 40 acres of land, which he owns. Mr. Sunderwirth requested me to visit his place and give him some information about drifting under, as the surface was getting too thick to strip. I advised him to start a drift at once, as it would be less expensive. The product is sold at the mine to farmers in the vicinity.

McCOLOUGH, WILLIAMS & STOVER MINE.

This mine is located one mile southwest of Foster, on the land owned by the Walnut Land & Coal Co. The mine is entered by a slope, and is operated by McColough, Williams & Stover. The slope is a new one and is in good condition. J. H. McColough is manager of the mine. Date of inspection, November 17, 1908.

McCONNELL MINE.

W. A. McConnell operates a mine one and a half miles west of Foster on 20 acres of land owned by J. W. Darby. The entrance to the mine is by shaft 40 feet in depth. Hoisting is done by horse power, and ventilation is produced by a furnace. The plan of working is room and pillar, and the coal is blasted off the solid.

I visited the mine on April 10 and November 17, 1908, and found it in good condition. The coal seam averages 38 inches in thickness, and is hauled over a tramway 1,400 feet long and dumped into cars on a spur switch from the Missouri Pacific Railway. W. A. McConnell, Foster, Mo., is manager.

HINES MINE.

E. T. Hines operates a slope two miles west of Foster. The plan of working is room and pillar, and the coal is blasted off the solid. The product is hauled in wagons two miles and loaded on cars and shipped to towns along the Missouri Pacific railway.

STRIP MINES NEAR FOSTER.

Coal mining in and about Foster is principally on the strip pit plan. The names of operators working during 1908 are: Thomas Scott, Treasurer, & Littlefield; Gus Trussel, Amos Floyd, Floyd & Hamilton, Shelton & Williams, Ed Doke, J. W. Craig, Cook and Rankin, Shelton & Metzler, Jos. Roberts and King Johnson.

BENTON COUNTY.

HUGHES MINE.

The only mine in Benton county is located two miles southeast of Windsor. The mine is entered by a shaft 23 feet in depth. Hoisting is done by horse power, and ventilation is produced by a furnace. The coal seam is five feet thick. It is worked on the room and pillar plan, and is blasted off the solid. The land on which the mine is located is owned by J. C. Budy, and includes 50 acres. The mine is operated by W. E. Hughes of Windsor, Mo.

On date of inspection, June 23, 1908, only four miners and one top hand were employed. The miners were drawing pillars, and Mr. Hughes informed the writer that when the pillars in this shaft were drawn out his career in the coal business and in Benton county would be ended.

The product of the mine is sold to farmers and in the vicinity of Windsor.

BOONE COUNTY.

COLUMBIA COAL MINE.

Located five miles northeast of Columbia, on 118 acres of land owned by the Columbia Coal Company and others. The entrance to the mine is by shaft 130 feet deep. Hoisting is done by steam, and ventilation is produced by a fan 10 feet in diameter. The mine is operated by the Columbia Coal Company. The plan of working is both room and pillar and long wall. In the room and pillar section the coal is partly mined and partly blasted off the solid.

The mine has shipping connections with the Wabash railway by a spur switch. The coal seam will average 40 inches. The interior of the mine was in fair condition. The tower was in bad condition for want of bracing, and instructions were given to have same braced by June 1, 1908.

I also found that the miners were firing their own shots. I gave verbal instructions while at the mine, and written instructions later, that such practice was unlawful and must be discontinued at once. Frank Lofty, Columbia, Mo., is superintendent and manager. Date of inspection, May 21, 1908.

W. R. PRATHER MINE.

The Prather mine is located on 320 acres of land owned by W. R. Prather, four miles north of Columbia. The entrance to the mine is by a shaft 46 feet in depth. Horse power is used for hoisting, and ventilation is produced by furnace. The plan of working is room and pillar. The coal seam will average 42 inches in thickness, and the product of the mine is hauled to Columbia in wagons and sold to local trade.

I examined this mine on May 20, 1908, and found that the miners were acting as shot-firers, contrary to law. I gave instructions to the owner that he must employ shot-firers, and that shots must be fired after miners retire from the mine. I also found the safety catches in need of repair. The ropes and cages in use were satisfactory. The scales were tested and found to be true and in good condition.

DAVIS-WATSON MINE.

This mine is located four and a half miles north of Columbia, on 150 acres of land owned by J. H. Keen. The entrance to the mine is by a shaft 110 feet deep. Hoisting is done by horse power, and ventilation is produced by furnace.

The product of the mine is sold at Columbia. The workings of the mine are on the room and pillar plan, and the coal is both mined and blasted off the solid. The thickness of the coal seam is 40 inches.

The operators, Davis and Watson, were instructed to cut down their force of miners from 10 to 5 until such time as they saw fit to make two openings. Instructions were also given to hire shot-firers. The ropes, cages, safety catches and scales were all in satisfactory condition. Date of inspection, May 19, 1908.

CALDWELL COUNTY.

CALDWELL COAL COMPANY.

This mine is located two miles east of Hamilton, on 1,200 acres of land owned by the Senney estate and others. The entrance to the mine is by a shaft 507 feet in depth. Hoisting is done by steam, and ventilation is produced by a fan, which was giving good satisfaction at date of visit.

The plant is owned and operated by the Caldwell Coal Co. I made an inspection of the mine on July 15, 1908, and found the underground workings in a very satisfactory condition, in fact the best in three years. The mine has shipping connections with the C., B. & Q. railway by a switch.

The plan of working is long wall, with independent roadways. The coal is of good quality for steam and domestic purposes. The coal seam will average 20 inches in thickness. The improvements made since my last visit were the retimbering of the air shaft for about 25 feet from the surface and the repairing of ladders. A new air course has also been made to the escape shaft, which is a great improvement over the old one, which was partly filled with falls of roof and water. All safety appliances were found in good condition.

Upon inspection of the oil, I found it below the standard, and gave instructions to Mr. Anderson to have same replaced with other oil that would stand the test required by law.

The officers of the company are: E. B. Hayden, president; C. S. Anderson, superintendent and manager; William Fulwood, foreman, with headquarters at Hamilton, Mo.

Since my last visit two new screens have been installed, one 10 and the other 8 feet long.

CALLAWAY COUNTY.

McCOWN MINE.

Robert McCown operates a mine in the vicinity of Stephens' Store during the fall and winter to supply home trade. Room and pillar is the plan of working, and the coal is undermined, and will average 3 feet in thickness. Horse power is used for hoisting and ventilation is by furnace. I inspected mine, December 8, 1908, and found same in satisfactory condition.

SIMS MINE.

Sims Brothers' mine is located south of Fulton, on 40 acres of land owned by W. F. Sims. The mine is operated by Thorp Bros. The shaft is 60 feet deep. Steam power is used for hoisting and pumping. The coal seam is the same as in other mines around Fulton. The product of the mine is consumed at the State institutions at Fulton.

This mine was formerly operated by Sims Bros. On date of inspection, December 7, 1908, I found the mine in good condition, with all safety appliances satisfactory.

SHELLEY MINE.

E. Shelley operates a mine in the vicinity of Stephens' Store. The entrance to the mine is by a shaft 25 feet deep. Horse power is used, and ventilation is by furnace. The plan of working is room and pillar, and the coal seam is three feet thick. The product is consumed in the vicinity of the mine.

HARRIS MINE.

Fred Harris operates a mine south of Fulton. The entrance to the mine is by shaft. Horse power is used in the operation of the mine, and ventilation is by furnace. The mine is practicaly new, and is in good condition.

FULTON FIRE BRICK AND FUEL CO.

This mine is located west of Fulton on 100 acres of land owned by the company. The mine is entered by a shaft. Steam power is employed in the operation of the mine, and ventilation is produced by a fan. The mine is operated by the Fulton Fire Brick & Fuel Company. The officers of the company are D. C. McCue, president, and L. W. Nickols, superintendent. I examined the mine on December 5th, and instructed the foreman in person, and the superintendent by letter, that unless the volume of air be increased and the shaft repaired from the coal to the clay, also both bottoms retimbered and put in good condition by January 1, 1909, I would close the mine until such time as the law is complied with.

BELL MINE.

Eli Bell operates a mine west of Fulton, on 40 acres of land owned by J. W. Wilfley. The mine is entered by a shaft 30 feet in depth. Horse power is used, and long wall is the plan of workings, with independent roadways. The coal seam will average 30 inches in thickness; the product of the mine is hauled to Fulton in wagons and sold locally. I inspected this mine December 5, 1908, and found same in satisfactory condition.

DIEHL MINE.

Henry Diehl operates a shaft two and a half miles northwest of Fulton. Horse power is used in the operation of the mine, and ventilation is natural. The coal seam is 30 inches thick, and the product of the mine is consumed at Fulton. On date of visit I found the mine in good condition.

FULTON COAL COMPANY.

This mine is located on 80 acres of land south of Fulton. The mine has a shaft entrance and is ventilated by a fan. Long wall and independent roadways is the plan of working. The coal is undermined, and the seam is 30 inches thick.

The product of the mine is consumed at the State institutions. Steam power is used for hoisting the coal and for pumping water. On date of visit, December 5, 1908, I found the mine in good condition.

NICKLESON MINE.

C. M. Nickleson operates a mine in the vicinity of Stephens' Store, 18 miles west of Fulton. The mine is entered by a shaft. Horse power is used in operating the mine. Working is done on the room and pillar plan, and the coal seam will average 36 inches in thickness. The mine is in good condition. The product is consumed in and around Stephens' Store.

SMITH MINE.

Located southwest of Fulton, on 165 acres of land owned by James Smith, who also operates the mine. Steam power is used for hoisting and pumping, and ventilation is produced by a fan. The product of the mine is hauled to Fulton in wagons and sold locally. The coal seam is 30 inches thick, and the mine is worked on the long wall plan. On date on inspection, December 7, 1908, I found the mine in good condition.

SIMMONS MINE.

This mine is located south of Fulton, on 90 acres of land owned by the Fulton Fire Brick Company. The mine is entered by a drift. Horse power is used for haulage in the mine, and ventilation is by furnace. John W. Simmons operates the mine, and the product is hauled to Fulton, where it is sold to local consumers.

The long wall and independent roadway plan is adopted. The coal seam will average 30 inches. On date of visit I found the mine in satisfactory condition.

CASS COUNTY.

CHEROKEE COAL MINING COMPANY.

This mine is located north of Creighton, on 450 acres of land owned by Miller & Polzine. The mine has a shaft entrance, and is 156 feet deep. Steam power is used in hoisting. Ventilation is produced by a fan 6 feet in diameter. The plan of working is room and pillar. The coal is blasted off the solid.

On date of visit, November 10, 1908, I found the mine well ventilated. The product is hauled over a tramway one-half mile long, and loaded on cars of the Frisco system. Ladders have been placed in the air shaft since my last visit. Victor Swanson is manager; postoffice address, Clinton, Mo.

CLAY COUNTY.

MISSOURI CITY COAL COMPANY.

This mine is located at Missouri City, on 500 acres of land owned by the Missouri City Coal Company, Joe Linginfelter and others. The mine has a shaft entrance 160 feet in depth. Hoisting is done by steam, and ventilation is produced by a fan 10 feet in diameter.

The mine is operated by the Missouri City Coal Company, of which Geo. C. Gray is president; C. G. Shaw, superintendent and secretary, and Joe

Hicklin, mine foreman. I made an inspection of this mine on June 4th, 1908, and found the mine in splendid condition after a suspension of two months. The day previous to my visit a miner had left one of the doors open, which caused considerable trouble, and an idle day for the west part of the mine. Instructions were given for a new door nearer to the working face on the straight west; also a new door on what is called the new road. During the suspension the tower was raised and new sills were put in all around the shaft, which greatly strengthens same. New timbers were placed on the drum and general repair work was done on the tower and pit top.

This is the only mine in Clay county. The coal is of good quality and finds a ready market in Kansas City and other points along the Wabash railway. Part of the product of the mines is consumed by the Wabash railway. The plan of working is long wall, with a face track. The coal seam will average 20 inches in thickness.

DADE COUNTY.

DAVIS MINE.

Davis Brothers operate a slope near Sylvania, on 160 acres of land owned by James R. Seeton. Horse power is used in operating the mine. Room and pillar is the plan of working, and the coal is undermined and sledged. The coal seam will average 30 inches. The coal is of a good quality and is sold at the mine.

I gave instructions to Davis Brothers to install scales at their mine by September 15, 1908. Freeman Davis is manager. Address, Jerico Springs, route No. 2.

WOOLDRIDGE MINE.

C. T. Wooldridge operates a shaft 20 feet deep near Sylvania, on 80 acres of land which he owns. Horse power is used in the operation of the mine. Room and pillar is the plan of working, and the coal is undermined and sledged. Ventilation is by natural means.

I made an inspection of this mine on August 10, 1908, and found the interior in good condition. The mine is practically dry with a splendid rock roof. The coal seam is 30 inches thick and of good quality. It is hauled in wagons to Lockwood, twelve miles distant, and loaded on cars on a spur switch from the Frisco system, and sold to dealers in Carthage, Joplin and other points along the Frisco road.

I found all mines in and around Sylvania without scales to weigh the miner's coal, as it comes from the mine. I gave instructions to install a scale at this mine by September 15, 1908. C. T. Wooldridge is owner, operator and manager; address, Lockwood, Mo., route No. 2.

HICKMAN MINES.

Oren Hickman operates a shaft 40 feet deep near Sylvania, on 120 acres of land, which he owns. Room and pillar is the plan of working and the coal is undermined. The coal seam will average 32 inches. Horse power is used in the operation of the mine.

Mr. Hickman operates a slope on the same farm, with the same kind of coal and same conditions. I gave instructions to Mr. Hickman to place scales at his mines to weigh the miner's product by September 15, 1908. The product of the mines is hauled in wagons to Golden City, eleven and one-half miles distant, where it is loaded in cars of the Frisco R. R. and shipped to points along the railway. Oren Hickman is owner, operator and manager; address, Golden City, Mo.

McCLUEY MINES.

Robert McCluey operates a shaft 24 feet deep, on 500 acres of land which he owns. Horse power is used in operating the mine, and the plan is room and pillar work. The coal is undermined and sledged. Mr. McCluey also operates a slope on the same land. Plan of working and other conditions the same as shaft.

The product of the mines are sold to farmers in the vicinity of the mines. These mines are without scales to weigh the miner's product. A pair at each mine was ordered installed by September 15, 1908. Robert McCluey is owner and operator; address, Lockwood, Mo., R. F. D. No. 2.

STAR COAL MINE.

Edward Sporman operates a coal mine near Sylvania, on 80 acres of land owned by McCombs heirs. The mine has a shaft entrance 38 feet deep. Hoisting is done by horse power, and ventilation is by furnace. Room and pillar is the plan of working, and the coal is undermined and sledged. The coal seam will average 50 inches in thickness and the product is sold at the mine.

I ordered Mr. Sporman to install scales to weigh the miner's product by September 15, 1908. Edward Sporman is owner and operator; address, Lockwood, Mo., R. F. D. No. 2. Date of inspection, August 11, 1908.

STOUT MINE.

W. A. Stout operates a shaft 33 feet deep near Sylvania, on 160 acres of land owned by C. S. McElhinney. The plan of working is room and pillar, and the coal is undermined and sledged. Horse power is used in the operation of the mine. The coal will average 28 inches in thickness, and is of a good quality.

The product of the mine is hauled to Lockwood in wagons and loaded on cars on a spur switch and shipped north and south. The distance to haul the coal is 12 miles and costs so much that very little is shipped when the roads are bad. The mine had no scales to weigh miner's coal, and the operator was ordered to install same by September 15, 1908. W. A. Stout is owner, operator and manager; address, Sylvania, Mo. Date of inspection, August 10, 1908.

HENRY COUNTY.

PARKS MINE.

Bud Parks operates a mine northwest of Calhoun, on 160 acres of land owned by Mrs. Parks. The entrance to the mine is by slope. The plan of working is long wall, and ventilation is by furnace. The product of the mine is hauled to Calhoun, and loaded on cars and shipped to Clinton and other points along the M., K. & T. railway. I visited this mine on February 20, 1908, and found everything in good condition.

PARKES COAL COMPANY.

This mine is located two miles northwest of Calhoun, on 100 acres of land owned by the Parkes heirs. The mine is entered by a slope and ventilation is natural. The coal seam is 40 inches thick, and the product is hauled to Calhoun in wagons and loaded on cars on a spur track from the M., K. & T. railway. Shipment is made to points along the M., K. & T. railroad.

I inspected mine on July 22, 1908, at which time the mine was in good condition. The mine is operated by the Parkes Coal Company, and A. T. Parkes is manager. Address, Calhoun, Mo.

REESE MINE.

William D. Reese operates a coal mine south of Deepwater. The mine has a shaft entrance 35 feet deep. Hoisting is done by horse power, and ventilation is by furnace. The plan of working is room and pillar, and the coal is blasted off the solid. The coal is about 30 inches thick, and is of good quality. The product of the mine is hauled in wagons a distance of one-half mile and loaded on cars on the Eaton switch, and shipped to Deepwater, where it is consumed at the tile factory.

On date of visit, November 6, 1908, I found the mine in good condition, with all the safety appliances satisfactory. William D. Reese is manager; postoffice, Deepwater, Mo.

BOWEN COAL COMPANY.

This is an incorporated company with the following officers: R. Bowen, president; John Bowen, vice-president and secretary; Wm. Bowen, treasurer; Thomas R. Bowen, superintendent.

Mine No. 2 is located five miles west of Windsor, and has shipping connections with the Rock Island railroad. The tract of land, comprising 1,100 acres, is owned by Miller, Russell and others. The entrance to the mine is by shaft 75 feet deep. The coal is hoisted by steam, and ventilation in the mine is produced by a 12-foot fan. Two inspections were made, one on February 19, 1908, and the other on June 24, 1908.

On my first visit to the mine I found the mine idle, and no examination of the underground workings was made. All safety appliances were found to be in good condition.

On my last inspection I found the mine almost filled with water, due to heavy rains. Pumps were used successfully, and it was thought that operation could be resumed by July 1st.

Mine No. 4, located two miles northwest of Windsor. The entrance is by shaft 85 feet deep. Steam power is used and ventilation is produced by a 14-foot fan. The fan is placed in an air shaft about 150 feet from the main shaft until an escape shaft has been sunk.

This is a new mine, the shaft having been sunk in the fall of 1907. I visited the mine on Feb. 18, 1908, and found the interior of the mine in splendid condition. The coal is mined on the room and pillar plan, and is blasted off of the solid. The thickness of the coal seam is from 5½ to 6 feet. All safety appliances were new and in good condition. The hoisting engine is first-class. The tower is 60 feet high and a model in construction. The shaker screen used is of the latest pattern. A box car chute is provided for the loading of coal in box cars, when same are loaded with coal. A Fairbanks scale with quick weighing device for the weighing of coal is installed, the first of the kind we have seen used in Missouri coal mines.

The management expects to install self-dumping cages. On date of visit the mine was producing 250 tons of coal per day. The product of the mine is consumed by the Rock Island railroad and distributed to points along the railway.

I made another inspection of this mine on June 23, 1908. The underground workings were examined. No miners were at work digging coal, but a large force of men were at work lifting bottom, timbering, laying track and switches and putting the mine in good shape generally.

The bottom is one of the best arranged in the State. The management is excellent, and I predict that in a short time this mine will be the largest producer in the State. Charles Lewis has charge of the underground workings and is a good man for the position.

BARNHART MINES.

E. A. Barnhart operates two mines, one east and one southeast of Clinton. Both mines are entered by shafts, and the plan of working is room and pillar. The coal is blasted off the solid, and the coal seam will average 30 inches.

The product is hauled to Clinton in wagons and sold locally. Both mines were operated by horse power. One is ventilated by furnace, the other by natural means. E. A. Barnhart, Clinton, Mo., is manager and operator. I inspected mine on November 9, 1908.

LEWIS COAL COMPANY.

This mine is located near the town of Lewis, on 100 acres of land owned by D. B. Pigg and others. The entrance to the mine is by shaft 35 feet in depth. Hoisting is done by steam. The plan of working is long wall. Two Harrison-Rand compressed air mining machines are used. The product is hauled over a tramway one-half mile long and dumped in cars on a spur track from the M., K. & T. railway. I made an inspection of this mine on February 21, 1908, and found the mine in good condition. D. B. Pigg is operator and manager; postoffice, Calhoun, Mo.

HURST MINE.

William Hurst operates a small mine southeast of Deepwater on 80 acres of land owned by Geo. Plympton. The mine has a shaft entrance 40 feet deep. Hoisting is done by horse power, and ventilation is natural.

The plan of working is room and pillar, and the coal is blasted off the solid. The product of the mine is consumed in the neighborhood of Deepwater. Date of inspection, November 7, 1908.

DEMAREE MINE.

This mine is located one and one-half miles northeast of Deepwater, and is owned by Henry Demaree. The shaft is 20 feet deep. Hoisting is by horse power, and ventilation is natural. The product of the mine is consumed in Deepwater. Mine was inspected November 7, 1908, and everything found in good condition.

CHURCH COAL COMPANY.

This mine is located one and a half miles southwest of Brownington, on 80 acres of land owned by Mr. Hobbs. The mine is operated by the Church Coal Co. Twelve miners constitute the company, and they employ six other helpers.

The mine is entered by a shaft 38 feet deep. Hoisting is done by horse power, and ventilation is by furnace. The product is shipped to points along the railway. The mine is a new one, opened in the summer of 1908, and is operated on the room and pillar plan. The coal is blasted off the solid. I found the mine in good condition.

W. S. DICKEY CLAY MANUFACTURING COMPANY.

This mine is located one-half mile east of Deepwater, and is owned and operated by the W. S. Dickey Clay Mfg. Co., with Sam Smith as manager. The mine is a new one, and has been worked only about six months. Hoisting is done by steam, and ventilation is produced by a fan 8 feet in diameter. The coal is hauled over a tramway a distance of one-half mile and then dumped in cars on a switch from the Frisco system. The mine is in good condition. The plan of working is room and pillar, and the coal is blasted off the solid.

I visited this mine on November 5, 1908, and found all safety appliances in good order. The main office is at Kansas City, and the local office, Deepwater, Mo.

JOHN HURST COAL COMPANY.

This mine is located east of Deepwater on 70 acres of land owned by Gus Blanchard. The entrance to the mine is by shaft 60 feet deep. Hoisting is done by steam, and ventilation is produced by a fan 8 feet in diameter.

This is a new mine, and is operated by the John Hurst Coal Co. I visited this mine on November 5, 1908, and found the mine in good condition, with all safety appliances in good working order. The plan of working is room and pillar, and the coal is blasted off the solid. The thickness of the coal seam is 30 inches.

Coal is hauled over a tramway one-half mile, and dumped into cars on a spur track from the Frisco system. John Hurst is owner, operator and manager, with headquarters at Deepwater, Mo.

LANE MINE.

E. M. Lane operates a mine northwest of Clinton, on land owned by Dr. Britts. The mine is entered by a shaft, horse power being used in the operation of the mine. The plan of working is the same as in other mines around Clinton. E. M. Lane is operator and manager.

PIGG MINE.

Located one mile north of Lewis on 100 acres of land owned by D. B. Pigg and others. The mine has a shaft entrance 50 feet deep. Hoisting is done by steam, and ventilation is produced by a furnace. The long wall plan of working is practiced. The coal seam will average 30 inches.

Two compressed air machines do the mining. I found the mine in good condition, with all safety appliances satisfactory. D. B. Pigg is operator and manager. Address, Lewis Station, Mo.

PHARRIS MINE.

Thomas Pharris operates a coal mine east of Clinton. The mine is entered by a shaft 20 feet deep. Hoisting is done by horse power, and ventilation is by natural means. The shaft is a new one, sunk during the present year.

Room and pillar is the plan of working, and the coal is blasted off the solid. The product is hauled to Clinton in wagons for market. On date of inspection, November 9, 1908, I found the mine in good condition. Thomas Pharris is operator and manager.

RUSK MINE.

William Rusk operates a coal mine six miles southwest of Deepwater on 160 acres of land owned by himself. The shaft is 30 feet deep. Hoisting is done by horse power, and ventilation is by natural means. The product of the mine is sold to farmers. On date of inspection, November 6, 1908, I found everything in good order. William Rusk, Deepwater, Mo., is owner, operator and manager.

JOHNSON COUNTY.

WORLING MINE.

Merrett Worling operates a shaft east of Warrensburg during the fall and winter months. Hand power is employed in operating the mine. Room and pillar is the plan of working. Coal is undermined and sledged. The product is hauled in wagons to Warrensburg and sold to local consumers.

BRANT MINE.

William Brant operates a shaft three miles northeast of Warrensburg during the winter months. The seam of coal and other conditions are the same as in other mines in the vicinity of Warrensburg.

BOWEN COAL COMPANY.

Mine No. 3 is located five miles west of Windsor on 320 acres of land owned by Russell and Garret. The mine has a shaft entrance, and is 70 feet deep. Hoisting is done by steam, and ventilation is produced by a fan eight feet in diameter. The mine has shipping connections with the Rock Island railway.

Room and pillar is the plan of working, and the coal is blasted off the solid. The coal is of a splendid quality, and the seam is 5 feet in thickness. I made an examination of this mine on June 24th, 1908. The interior of the mine was not in as good condition as the writer expected. I found several old room necks not closed and throwing off damps and foul air. I found several other rooms needing curtains, and was informed by the man in charge that there were none on the place.

I called on the superintendent and gave instructions to have old and abandoned rooms gobbed up at once, and to order curtains and keep same on hand and ready for use at all times. I found several break-throughs too small to admit enough air to supply the miners. I gave instructions to the mine committee and checkweighman that the miners must make larger break-throughs, and assist in having proper ventilation in the mine.

All safety appliances were in good condition. The mine has only worked a few days since the first of April, at which time the mine suspended work until a new contract between the miners and operators was made. John Daley is foreman of the mine.

AMERICAN FUEL DEVELOPMENT COMPANY.

This company is located at Chilhowee in Johnson county. Having read in papers that the engine and boiler rooms at Mine No. 1 were destroyed by fire on June 15th, I visited the mine on June 26th, and found the statements made in the papers to be correct. Ropes were burned and cages fell to the bottom of the mine. The hoisting engine and compressor were badly damaged, and the cells to both engines were burned out, and all packing and babbit had to be replaced.

The men at work at the other mine, where a double shift is working, noticed the fire and arrived in time to save the tower and pit top by cutting the braces, employing every means to prevent the fire from spreading to other buildings close to the mine. The cause of the fire is not known, but the general supposition is that some miner or miners left their lamps burning when they came off the night shift, and the lighted lamps set fire to the building or other inflammable material. The loss, I understand, is fully covered by insurance.

On date of visit most of the material was on the ground to repair the loss. Mr. David, the superintendent, informed me that work would be resumed in a few days.

This company has caused the Inspectors of the State considerable trouble with reference to a second opening. I am glad to say, however, that the second shaft is now down 178 feet, and if nothing goes wrong for six weeks, connections will be made between Mines No. 1 and No. 3. Mine No. 1 is within 45 feet of the bottom of Mine No. 3, and about the time No. 3 strikes the coal No. 1 will be ready to make connections.

The work of erecting a tower and engine at No. 3 has been commenced. Two 100-horse power boilers are now in place, and a concrete foundation is in course of construction. All material is on the ground, and will be put in place as soon as men and money can do so. W. B. Henry is president and manager, and David Arnott is superintendent of the mines.

P. H. BULLOCK MINE.

P. H. Bullock operates a strip mine in the vicinity of Warrensburg. All of the product is hauled to town and sold locally. I inspected this mine December 2, 1908, and found everything in satisfactory condition.

HAMMOND MINE.

W. H. Hammond operates a slope in the vicinity of Warrensburg, to supply home demand. The coal seam is from 20 to 30 inches thick, and is worked on the room and pillar plan. The coal is undermined and sledged. The product is hauled in wagons to Warrensburg, where it is sold.

D. A. BULLOCK MINE.

D. A. Bullock operates a slope on Bristle Ridge, eight miles east of Warrensburg. Room and pillar is the plan of working, and the coal is undermined. The coal seam is of good quality, and is 24 inches thick. The product is hauled in wagons to Warrensburg and sold.

SNODDY MINE.

J. Snoddy operates a shaft west of Warrensburg. The plan of work is room and pillar, and the coal is blasted off the solid. The product is hauled to Warrensburg in wagons and sold. On date of visit, December 3, 1908, I found the mine in satisfactory condition.

SUTHERLAND COAL COMPANY.

This mine is located on 280 acres of land owned by Mrs. L. A. Hudson, one-half mile east of Sutherland, on the M., K. & T. railway. The officers of the company are: G. S. Booth, president; W. E. Botts, W. F. Cooper and G. F. Booth, managers.

I visited this mine on June 25, 1908, and found John J. Hughes in charge as foreman. The mine has a shaft entrance 180 feet deep. Hoisting is done by steam, and ventilation is produced by a fan 8 feet in diameter. The coal seam is 22 inches thick, and is worked on the long wall plan. The management is considering a face track system, such as is in use in the mines of Ray, Clay and Lafayette counties. I am of the opinion that the operation of this track system will be unsuccessful, on account of the top, which is of soapstone for 16 feet on top of the coal. I advised that independent roadways be adopted instead of face track.

I found the tower, engine and other buildings to be crudely constructed. The cage is home-made and poorly constructed, and without safety appliances. I gave the manager instructions to have new cage made with safety catches on same; also, to have ladders put in air shaft, so that miners can climb out in case of accident.

The company is composed of men who seemingly have had no practical experience in coal mining. Since the coal was struck last January, mining was done by inexperienced hands, who shot the coal out, blowing same into dust, wasting nearly 50 per cent. of the product. The company has now secured the services of John J. Hughes, a man experienced in long wall work, with the result that the mine is producing better and more marketable coal. The coal from this mine is shipped to local dealers at Sedalia.

I made a second inspection of this mine on July 21, 1908. William J. Evans is now in charge as foreman, having succeeded J. J. Hughes. On my first visit to the mine, I gave instructions to secure new cage with safety catches, and also to place ladders in shaft. I found that both cage and ladders were completed and ready to be put in place.

The shaft is 180 feet deep, and mine is ventilated by a fan. The company was preparing to lay switch tracks from the M., K. & T. R. R., the work of grading having commenced.

LAFAYETTE COUNTY.

ED AULL MINE.

This mine is located two miles east of Lexington on 360 acres of land owned by Mrs. Brooks and others. The entrance to the mine is by slope, and ventilation is produced by fan.

I inspected mine on July 24, 1908, and found the ventilation on the east side very sluggish. I advised Mr. Aull that an overcast and a split in the air was necessary for the health and safety of his employes, and he promised to provide same as soon as possible. I found the scales greatly in need of repairs, and ordered same repaired at once. The work in this mine is done on the long wall plan, and the coal seam averages 20 inches, and is of good quality.

I made another inspection of this mine on September 29, 1908, and found that my orders for a split in the air and a new overcast had been carried out. A new 10-foot fan had been installed to take the place of one not entirely satisfactory to the Inspector. Mine is now in good condition.

BELL & GREER MINE.

This mine is located one mile south of Lexington on 70 acres of land owned by Bell & Greer and others. The entrance is by drift, and the work is done on the long wall plan, with a movable face track. The coal seam will average 18 inches in thickness, and a good quality of coal is mined.

The product of the mine is sold to local dealers. The mine is ventilated by a furnace, which was giving entire satisfaction on date of inspection, February 11, 1908. The sanitary conditions were excellent. I made another visit to the mine on April 21, 1908, and found the mine idle.

BONANZA COAL COMPANY.

This mine is located on 257 acres of land two miles east of Higginsville, and is operated by the Bonanza Coal Co. of Higginsville. The mine has a shaft entrance 80 feet in depth. Hoisting is done by horse power, and ventilation is produced by a fan 8 feet in diameter, run by a gasoline engine, which was giving splendid results in each section of the mine.

I visited this mine on February 25, 1908, and found the underground workings in excellent condition. All safety appliances were found satisfactory. The plan of working is long wall, with a movable face track. The mine has shipping connections with the C. & A. R. R. by a spur switch.

The main shaft, a short distance from the surface, was ordered retimbered, and a corn crib erected between the shaft and the fan house was ordered removed. In case of fire at the main shaft the fire would spread to the crib and from there to the fan house. The product of the mine is shipped to Kansas City and other points along the C. & A. R. R. S. W. Brandaw of Higginsville is manager, and Peter Stalzer is foreman.

CENTERBERRY & GRIFFITH MINE.

Centerberry & Griffith operate a mine in the vicinity of Higginsville. The mine is entered by a slope. Long wall and face track is the plan of working, and ventilation is produced by a furnace.

The product of the mine is hauled in wagons to Higginsville and sold. The mine was found in good condition on date of inspection, December 11, 1908.

DIAMOND COAL COMPANY.

Wilson Mine, one of the mines of this company, is located ¾ mile east of Corder on 310 acres of land owned by the Diamond Coal Company and others. The mine is entered by a shaft. Long wall and face track is the plan of working. The coal seam will average 18 inches. Shipping connections are with the C. & A. railway. A fan 8 feet in diameter furnishes ventilation, which was giving satisfactory results.

I examined this mine on September 17, 1908, and found the underground workings in a very satisfactory condition. The mine was formerly operated by horse power. I am glad to note the following improvements: A new tower 60 feet high, a new hoisting engine, two boilers, new cages, ropes, a new engine and boiler room built of brick with a concrete foundation, and a new weigh office. The foundation to the engine is the best the writer has ever seen in this part of the State. C. L. Wilson is manager, and John Hughes is foreman. Postoffice, Corder, Mo.

SALT FORK MINE.

Salt Fork Mine, owned and operated by the same company, is located one-half mile east of Corder on 440 acres of land owned by Chas. Liese. The entrance to the mine is by shaft 47 feet in depth. Hoisting is done by horse power, and ventilation is produced by a fan 8 feet in diameter, and run by steam.

I examined this mine on September 18, 1908, and found everything underground and on top satisfactory and up-to-date. The mine has shipping connections with the C. & A. R. R. by a switch. Long wall and face track is the plan of working. Coal will average 18 inches.

DOVER COAL COMPANY.

This mine is located at Dover, 12 miles east of Lexington, on 265 acres of land which the company owns. The mine is entered by a drift. Long wall and face track is the plan of working. The coal seam will average 22 inches. Shipment is made to Kansas City and other towns along the Mo. Pac. railroad.

The mine is operated by steam power for pumping water and running a 12-foot fan, which ventilates the mine. I inspected mine December 30, 1908, and found everything in a satisfactory condition. Tilden Davis of Lexington, Mo., is manager.

DUNCAN MINE.

Charles Duncan operates a drift coal mine in the vicinity of Higginsville on 120 acres of land owned by Wm. Wehrman. The product is consumed in Higginsville. The mine is ventilated by natural means. I inspected the mine December 10, 1908, and found same in good condition. Long wall and face track is the plan of working. The coal seam will average 20 inches.

FARMERS' COAL COMPANY.

This company is incorporated under the laws of Missouri and is capitalized for $150,000. The officers of the company are: C. A. Snider, president; G. B. Beatty, vice-president and general manager; W. C. Duvall, secretary. General office, 505 Long Building, Kansas City, Mo. The company operates a number of mines in Lafayette county, and has $170,000 invested in plants and general equipment.

Mine No. 1 is located ¾ mile west of Higginsville, on 330 acres of land owned by Henry Hader and The Farmers' Coal Company. The mine is entered by a shaft 80 feet deep. Hoisting is done by steam, and a 10-foot fan furnishes ventilation. Electric power is also used in the operation of the mine. Six Goodman mining machines do the mining, and the power is furnished by a 200 K. W. dynamo.

Late improvements are: A five-ton motor, 12,000 feet of trolley wire, 80 tons of steel rails (12 by 16 lbs.), 150 new pit cars, and 250 old cars equipped with new couplers. Connection has been made with Mine No. 3, and the coal from the latter mine on the southeast side will now be hauled to Mine No. 1 and hoisted and loaded in cars on a switch from the C. & A. railroad.

I inspected these mines on August 25, 1908. Very little can be said of the air current on date of inspection, as the changes and connections between the two mines will require rearrangement of the air current. The mine was still undergoing repairs, and it will require several weeks work before mine will be in full operation with new equipment.

Mine No. 3 is located two miles southwest of Higginsville on 397 acres of land owned by Hoefer & Meinershagen. The entrance to the mine is by shaft 48 feet deep. The mine has steam hoisting apparatus and fan ventilation. Ten Goodman mining machines are operated in this mine, the power being furnished by a 125 K. W. dynamo.

I inspected this mine on February 27th and August 26, 1908. On my first visit I found a defect in ventilation in the entry going in the direction of Mine No. 1, to which I called the superintendent's attention, and which he promised to remedy at once. Otherwise everything was in first-class condition.

On my second visit to the mine, August 26th, I found the air current bad, on account of three doors which were in need of repair. I also considered a new door necessary on the Fortner road. I called attention to these defects, and on the following day carpenters were put to work to make the repairs. Otherwise the mine was in good condition.

Mine No. 6 is located one and a half miles west of Higginsville on 160 acres of land owned by August Meinershagen. Entrance to the mine is by shaft 26 feet deep. Hoisting is done by steam, and ventilation is produced by a 10-foot fan.

I made two inspections of this mine during 1908, viz.: February 28th and August 27th. On date of first inspection the mine was operated on old method of pick work. I was informed that pick work was only temporary, and would be abandoned as soon as water could be pumped out of mine, which had accumulated during suspension, pending settlement of new agreement.

A fire destroyed the engine room during the month of December, 1907, and the mining machines were taken out to prevent damage to the machines by water and fall of roof. Three Goodman mining machines will be operated in this mine, and the power will be furnished by the 200 K. W. dynamo from Mine No. 1. I gave instructions to have covers placed on cages at this mine at once.

Mine No. 7 is located ten miles west of Higginsville on land owned by Henry Meyers. The entrance to this mine is by drift and the method of work is long wall and face track. This mine only lately came into possession of the Farmers' Coal Co., prior to which it had been abandoned. The mine has been equipped with electric power and three Goodman mining machines. The power will be furnished by the dynamo at Mine No. 3, three-fourths of a mile distant. A splendid tipple and a new office have been built, and a new scale for the weighing of the coal has been installed: A tower 60 feet high has been erected close to the mine entrance, and a small hoisting engine, taken from Mine No. 1, was installed. I inspected this mine February 26th and August 28, 1908, and found same in good condition and the law fully complied with.

KRATZ MINE.

Kratz and Son operate a slope in the vicinity of Higginsville during the fall and winter, to supply home trade. Long wall and face track is the plan of working, and the coal seam will average 18 inches in thickness. Wm. Kratz, Higginsville, Mo., is manager. Date of inspection, December 9, 1908.

J. H. LOONEY MINE.

This mine is located one mile west of Higginsville on land owned by Chas. Meinershagen. The mine has a shaft entrance 75 feet in depth. Hoisting is done by steam, and ventilation is produced by a fan 8 feet in diameter, which was giving satisfaction on date of visit, August 27, 1908.

During the last three years this mine has been operated by different parties. At present it is operated by Richard Sebastian of Higginsville, Mo. C. & A. railway spur switch to the mine.

McGREW COAL COMPANY.

Incorporated under the laws of Missouri; capitalization, $30,000. The officers of the company are: J. C. McGrew, president; E. J. McGrew, vice-president and general manager; J. C. McGrew, Jr., secretary and treasurer. General offices of the company at Lexington.

Mines Nos. 1 and 2, located three miles west of Lexington and on 1,100 acres of land owned by the McGrew Coal Co. The entrance to these mines is by drift. Mines Nos. 1 and 2 are connected, and, in fact, constitute one mine. I made an examination of this property on July 23rd, and again on November 28, 1908, and found same in excellent condition.

Steam and electric power is employed in the operation of the mines. Mining is done with seven Goodman mining machines, and the hauling is done by five electric motors.

Shipping facilities are via River Route of the Mo. Pac. railway. I was called to these mines by the Miners' Union to settle a dispute between miners and operators in regard to breaking up sulphur with dynamite during the day when miners are at work. I took this up with Mr. E. J. McGrew and his mine superintendent, Thomas Wedge, both agreeing to discontinue the practice of breaking up sulphur during time miners are at work.

At Mine No. 1 I found the scales weighing in favor of the miner, and against the company. I notified the management of the condition of the scales, and the defect was promptly corrected.

I take great pleasure in reporting that these mines are always found in splendid condition, and desire to commend Mr. McGrew on his excellent management.

PERRY BROTHERS MINE.

This mine is located two and one-half miles south of Higginsville on 160 acres of land owned by John Wagner. The mine was formerly operated by E. J. Hoffman.

Entrance is by a shaft 30 feet in depth. The coal is hoisted to the surface by horse power, and ventilation in the mine is provided by a furnace. Work is on the long wall plan, with a movable face track. The product of the mine is consumed locally. Mine was inspected February 21st and December 10, 1908. Everything in and about the mine was in good condition. K. S. Perry is manager.

PLATTENBERG COAL COMPANY.

Mine is located three-quarters of a mile south of Lexington on 35 acres of land owned by the Plattenberg Coal Company of Lexington. Entrance to the mine is by drift, and is operated on the long wall plan, with movable face track. Haulage is by hand power, and ventilation is produced by a furnace.

The product of the mine is consumed locally. Inspection was made twice during the year, February 13th and April 22, 1908, and I found conditions satisfactory.

SIPE MINE.

Sipe & Son operate a mine south of Lexington on 15 acres of land owned by the Plattenberg Coal Company.

Entrance to the mine is by shaft 28 feet deep. Hoisting is done by horse power, and ventilation is by furnace. Long wall and face track is the plan of working. Inspections were made on February 13th and April 22, 1908. This is one of the small mines which I always find in good condition. C. C. Sipe, the manager and operator, is an old and practical miner, and understands how to take care of the mine.

STOLL MINE.

Stoll Brothers operate a small slope two and one-half miles east of Higginsville on the Vieth land. Horse power is used, and ventilation is by furnace. The method of work is on the long wall plan. The product is sold to local trade. Date of inspections, February 25th and December 10, 1908. Conditions very satisfactory.

DAVIDSON MINE.

James Davidson operated a slope coal mine near Higginsville during the fall and winter months to supply home trade. Long wall and face track is the plan of working. The coal will average 18 inches in thickness, and is of a good quality. On date of visit, December 11, 1908, I found the mine and all safety appliances in good order.

MACEY MINE.

E. M. Van Guilder operates a mine on the land of the Henry Macey estate, located near Myrick Station, with headquarters at Kansas City.

The mine is entered by a drift, and is operated on the long wall plan with face track. The coal seam is about 22 inches thick, and a good quality of coal is taken out. The product of the mine is sold in Kansas City, and in towns along the Mo. Pac. railway. Joseph Perry is manager of the mine, and conditions in and about the mine on dates of inspections, February 14th and December 30th, were first-class.

WAVERLY BRICK AND COAL COMPANY.

This mine is located near Waverly on the bank of the Missouri river. The mine has a shaft entrance, and is provided with fan ventilation. I went out to the mine on August 20, 1908, and found same idle. I was informed that the property was sold under sheriff's sale, but was unable to learn particulars.

HAMILTON & BENNETT MINE.

Hamilton & Bennett operate a coal mine in the vicinity of Higginsville during the fall and winter months, to supply local trade. The mine was in good condition on date of visit, December 11, 1908. Ventilation is produced by a furnace, and is good.

OLD GLORY MINE.

Located on 80 acres of land owned by Edward Meinershagen & Son. The mine is entered by a drift, and is ventilated by a furnace. The Higginsville Coal Company operates the mine. Frank W. Coover is manager, and Andy Czar is foreman.

On date of examination, August 28, 1908, I found the mine in good condition and well ventilated. The roads are being brushed, so that mules can be used in hauling the coal. Long wall and face track is the plan of working. The coal seam will average 18 inches in thickness, and is of a good quality.

The coal is hauled over a tramway 300 feet long and dumped on cars on a spur track, which connects with the C. & A. and the Missouri Pacific railways.

INDEPENDENCE COAL COMPANY.

This mine is located one mile east of Napoleon, and is operated by the Independence Coal Company of Independence. The entrance to the mine is by shaft 50 feet deep. Hoisting is done by steam, and ventilation is produced by a fan 4 feet in diameter. Stephen Gates owns 80 acres of land on which the mine is located.

The roads are very wet and muddy, and a good deal of water had to be contended with. Shipping facilities are with the Mo. Pacific Railway Company by a switch.

Long wall and face track is the plan of working. The coal will average 18 inches in thickness. The officers of the company are: R. May, president; Alvin May, superintendent. Postoffice, Independence, Mo. Date of inspection, September 23, 1908.

KIERSTEAD COAL COMPANY.

This mine is located one mile west of Corder on 570 acres of land owned by the Kierstead Coal Company, who also operate the mine. Entrance to the mine is by shaft 90 feet in depth. Hoisting is by steam, and ventilation is produced by a fan 8 feet in diameter.

I examined the mine on September 19, 1908, and gave instructions to have a door installed on the south entry at once. I found that part of the mine was poorly ventilated. I also gave instructions for two new cages to be installed as soon as possible, as I considered both cages in bad condition. The main shaft has been retimbered down 40 feet from the surface.

LATCHAW MINE.

This mine is located on land leased from Read & Taylor by C. B. Latchaw. It is a drift, operated by hand power, and little or no coal was taken from the mine during 1908.

CORDER COAL COMPANY MINE.

This mine is located near Corder. The mine is entered by a shaft 40 feet deep. Hoisting is done by horse power and ventilation by furnace. The plan of working is long wall, with a movable face track.

This is a new shaft, and is well equipped with safety appliances, which were in good condition on date of visit, December 9, 1908. The product is sold at Corder and at the mine. James Hutson is manager.

CARY MINE.

This mine is located at Mayview on 144 acres of land owned by A. B. Mathews. The mine is entered by a shaft 135 feet deep. Hoisting is done by steam, and ventilation is produced by a furnace.

The mine is operated by B. H. Cary of Kansas City. The plan of working is long wall, with a movable face track. Shipping connections are with the C. & A. railway. On date of visit I found the mine with all safety appliances in first-class condition.

Note.—No output for 1908 reported.—Secretary.

RIDD MINE.

Warren Ridd operates a drift on the Bell & Greer land, south of Lexington. The mine is operated on the long wall plan, the coal seam averaging 18 inches. Ventilation is produced by a furnace. I inspected mine on April 21, 1908, and found same in good condition. Eight miners were employed on date of visit. The output of this mine is included in the Bell & Greer report.

WRIGHT MINE.

Samuel Wright operates a mine on 10 acres of land which he owns. The entrance to the mine is by shaft 28 feet in depth. Hoisting is done by horse power, and ventilation is produced by a furnace. The product of the mine is hauled to Lexington and sold to local consumers.

This mine was abandoned for years, and has just been opened up again. I inspected the mine on April 21, 1908, and condemned the ropes, and ordered Mr. Wright to have new ones within thirty days; also, ordered a new scale. Otherwise the mine was in good condition.

WATERLOO CO-OPERATIVE COAL COMPANY.

This mine is located one-half mile east of Waterloo, and was formerly operated by the Labor Exchange, Branch 336, of Waterloo. This organization is now out of business, and a company known as the Waterloo Co-operative Coal Company is now operating this mine.

At a former visit I condemned the rope on the north side. On date of this visit, September 22, I instructed the manager, Mr. Smith, to have a new rope installed at once on the south side, and gave instructions for all men to ride the north cage until a new rope on south side was in place.

The mine has a shaft entrance 45 feet deep. Hoisting is by steam, and a fan 8 feet in diameter ventilates the mine. All safety appliances were in good order. Preston B. Smith is president of the new company, and P. R. Smith is secretary and treasurer.

GEISENDOERFER MINE.

This mine is located two miles southeast of Corder on 80 acres of land owned by S. F. Geisendoerfer. The mine is operated by W. R. Blont. The entrance to the mine is by slope. Long wall is the plan of working, with a movable face track.

Coal seam will average 16 inches in thickness. The product is sold in Corder and surrounding country. Three miners and one helper are employed.

Note.—The operator made no report of output for 1908.—Secretary.

STEAMBOAT COAL AND MINING COMPANY.

This company owns and operates a mine on the bank of the Missouri river, and has shipping connections with the River Route of the Missouri Pacific railway. The mine has a shaft entrance 100 feet deep; steam hoisting, and fan ventilation. Work is done on the room and pillar plan, the coal being blasted off the solid.

Average thickness of coal seam is 54 inches. On date of inspection, October 15, 1908, all safety appliances were in good condition. This mine was formerly operated by the Waverly Coal and Mining Company, but is now operated by the Steamboat Coal and Mining Company. J. W. Ferguson is manager, with headquarters at Kansas City.

Note.—Company made no report of output for 1908.—Secretary.

WESTERN COAL AND MINING COMPANY.

Incorporated under the laws of Missouri, and capitalized for $1,000,000. The officers of the company are: Edwin Gould, president; B. F. Bush, vice-president and general manager; P. L. Du Bois, secretary; F. M. Hickman, treasurer; B. F. Wiley, mine superintendent.

The company owns and operates the following mines in Lafayette county: Glen Oak, Valley, Midway, Summit, Seawell and South mines. Inspection was made of the following:

Summit Mine, located in section 9, township 50, range 27, three miles south of Lexington. The mine is entered by a shaft 160 feet deep; steam and electric power is furnished from the Midway Mine, where two dynamos, 175 and 300 K. W., respectively are installed. I made an examination of this mine on September 2, 1908, and found that the ventilation, produced by a 12-foot fan, was not sufficient on the east side. In looking for a cause, I found several doors on that side in need of repairs, and I ordered same repaired soon as possible. I also ordered the superintendent to put double doors on the north and south entries, in order to prevent waste of air when mules and men are passing through. The mine furnishes employment to 132 loaders, seven drivers, 53 day men and 13 top men. Sperry mining machines are in use in the mines. The only improvement made this year was the erection of new smoke-stack. The entries are high and dry, but a little dirty from coal and dirt falling from the boxes. Otherwise everything is in good condition.

Valley Mine, located in section 4, township 50, range 27, two miles south of Lexington. Steam and electric power is used, and ventilation is produced by a 12-foot fan. The plan of working is long wall, with movable face track.

I examined this mine on September 4, 1908, and found same in first-class condition, except a defect in ventilation. The main, north and south entries have only single doors, and when passing through either of these doors, the air current returns to the air shaft, thus causing a waste of air. Mr. Wiley promised to remedy this defect by having double doors placed on all the main roads leading to the air shafts, and far enough apart to allow a trip of coal between doors, so that when one door is open the other will be closed.

Five Goodman mining machines undermine the coal in this mine. There are 120 loaders, 7 drivers, 45 day men and 11 top hands employed in the mines. Haulage is done by 7 mules. I found all safety appliances in good condition and the scales in perfect order.

South mine, located in section 16, township 50, range 27, four and one-half miles south of Lexington, on a spur switch of the Missouri Pacific R. R. Entry is by shaft 180 feet deep, and ventilation is furnished by a 12-foot fan. This is practically a new mine. Like the other mines operated by the company, the mine is equipped with steam and electric power. A 150 K. W. dynamo furnishes power for three Sperry mining machines. The engine and dynamo rooms are built of brick, and of the latest pattern. A blacksmith and machine shop has also been built. I found the mine in first-class condition, with everything new and up-to-date. An overcast has been constructed and four currents of air circulate through the various sections of the mine.

The bottom, which is 25 feet wide, is one of the best, if not the best, in the State. The mine gave employment on date of visit for 34 loaders, 1 driver, 18 day men and 6 top men.

Midway mine, located in section 9, township 50, range 27, two and one-half miles south of Lexington. The entrance is by shaft 140 feet deep; steam and electric power; ventilation by a 12-foot fan. Inspection was made on September 3, 1908. The air current is split into four sections, ventilating the four different sections of the mine.

Two dynamos, 300 and 175 K. W., respectively, furnish power for three mines of this company. Six Sperry machines are used and 156 men are engaged in loading coal. Besides these the mine gives employment to 8 drivers, 66 day men and 15 top men. A machine shop is located near the mine, where most of the repair work is done. I found the interior of the mine in first-class condition and the scales in perfect order.

RAY COUNTY.

PENCE & CALNEN MINE NO. 6.

This mine is located south of Richmond on 132 acres of land owned by Jacobs, Seward & Russell, and is operated by Pence & Calnen. The entrance to the mine is by shaft 100 feet deep. Hoisting is done by steam, and ventilation is produced by a fan 8 feet in diameter, which was giving very satisfactory results. Long wall and face track is the plan of working. The coal seam will average 24 inches.

I made an examination of this mine on July 1, 1908, and found that a good deal of water was coming into the mine through a break in the roof. A new pump has been installed, and it is expected that within a few weeks the mine will again be dry. I called the manager's attention to some repairs that were necessary in the main shaft, which he promised to make.

The mine has shipping connections with the St. Joe branch of the Santa Fe and Wabash R. R. by a spur switch. The coal is shipped to St. Joseph, Kansas City, and other points along the road. All safety appliances and scales were in good condition. Thirty-five miners, two drivers, three helpers, three top hands and two mules were at work. James Calnen is manager and president; James Pence, superintendent, and Bud Brady, foreman.

MERCANTILE COAL & MINING CO.

The officers of this company are: J. W. Atwell, president; F. R. Atwell, secretary and treasurer; Robert Blair, foreman of the mine. The mine of this company is located on 240 acres of land owned by Duvall & Graham, northwest of Richmond.

Entrance to the mine is by shaft 190 feet deep. Steam power is used in the operation of the mine, and ventilation is produced by a 10-foot fan. Work in the mine is on the long wall plan, with movable face track. Shipping facilities are with the St. Joe Branch of the A., T. & Santa Fe railroad.

I examined this mine on March 6th, 1908, and again on December 18, 1908. I found the mine in good condition on both visits, except that roadways were a little dirty. This, however, is attributable to the fact that the coal is very brittle in places and the falls from heavily loaded boxes break into fragments. When mine is running full force more than 100 men are employed in and about the mine, but on date of last visit only 43 miners and 10 helpers were employed.

BUCHANAN MINE.

Alexander Rankin operates the above named mine, which is located three miles south of Richmond, on 200 acres of land owned by Mrs. W. R. Buchanan.

The entrance to the mine is by shaft 26 feet deep. Hoisting is done by horse power. The ventilation is by furnace. The coal seam will average 22 inches and coal is of a good quality, all of the produce being sold at the mine to local trade. Only two miners were employed on day of inspection, December 1, 1908.

BISBEE MINE.

This mine is located 15 miles northeast of Richmond on 80 acres of land owned by Wm. Bisbee. The entrance to the mine is by a shaft 145 feet deep, and the coal is hoisted to the surface by steam power. Ventilation is produced by a fan operated by a gasoline engine. The plan of work is long wall with movable face track. The coal seam is very faulty and irregular.

Because of the faulty condition of the coal, and there being no escape shaft in the mine, only five miners are allowed to work in the mine.

I inspected the mine on October 20, 1908, and found that since my former visit in February, Mr. Bisbee sold his mine and coal rights to O. P. Hymer of Batesville, Mo.

GRIMES MINE.

The mine is located 15 miles north of Richmond, on 107 acres of land owned by Hugh Blair of Knoxville, Mo., who operates the mine. Entrance to the mine is by shaft 190 feet deep. The coal is hoisted to the top by horse power. Ample ventilation is produced by fan, the power being furnished by a gasoline engine.

Coal is worked on the long wall plan with a movable face track. On date of inspection, February 3, 1908, I found mine in good condition with all safety appliances in good working order. Only five men were at work in the mine. This is the maximum number allowed on one shift under the law until an escape shaft is sunk, but this law is usually evaded by working two or three shifts of five miners each.

I again visited this mine on October 19, 1908, and am glad to report that I found the second shaft, generally known as the escape shaft, down to the coal, and in a few days connections will be made with the main shaft. The operator can then employ any number of men.

BLAIR COAL COMPANY.

Mine is located east of Richmond on 68 acres of land owned by the Blair Coal Co. (Thompson, Mason & Bates). The entrance to the mine is by shaft 60 feet deep. Hoisting is done by horse power, and ventilation is secured by natural means.

I made an examination of this mine on June 20, 1908, and found the interior workings in good condition; also all safety appliances. The plan of working is long wall, with a movable face track. The mine is at present operated by Love & Blair of Richmond, who employ five miners and one top hand. Noah Love is manager.

CENTRAL COAL & COKE CO.

This mine is located at Fleming, and is the only electric mining plant in Ray county. The mine is owned and operated by the Central Coal & Coke Company, and has shipping connections with the Wabash and Santa Fe railroads.

The entrance to the mine is by shaft 75 feet in depth. Hoisting is done by steam, and ventilation is produced by a fan 12 feet in diameter, which was giving good results at date of visit. The coal seam is 20 inches thick, and is worked on the long wall plan with a moveable face track. Six Goodman Chain Electric Mining Machines do the mining and two five-ton motors do the hauling, with the assistance of one mule in the bottom to make the up-trips.

I made an examination of this mine on July 7, and found the underground workings and all safety appliances in good condition. There were employed in the mine 60 loaders, 36 other help and 10 top hands. F. E. Doubleday is manager; William Taylor, superintendent; Geo. H. Burge, manager, and James Wyatt, foreman.

CLARK MINE.

Jacob Clark operates a mine on 45 acres of land which he owns. Entrance to the mine is by shaft 40 feet deep. Horse power is used, and ventilation is by steam fan, 4 feet in diameter. The mine is limited to five miners, having no escape shaft. I visited this mine twice during the year 1908, the first time on February 7th, the last time on December 24th. I found everything in good condition on both visits.

CRAWFORD-WILSON COAL CO.

The location of the mine of this company is west of Richmond, on 278 acres of land owned by Messrs. Marshall, Wilson and Shotwell. The officers of the company are: Mrs. Mary Crawford, president; Chas. Crawford, vice-president; Daisy Wilson, secretary; William Wilson, superintendent.

The mine has a shaft entrance 100 feet deep, steam haulage and fan ventilation. The air current is carried down the main entry to the south road-head, where it splits to the east and west, the west split returning by way of an overcast near the bottom, where the two currents meet and return to the upcast, which is a part of the main shaft.

I made two inspections of this mine, March 2nd and November 30, 1908. On both visits I found the mine in very good condition. All ropes, cages, safety catches and scales were satisfactory.

The company ships the output of the mine by way of the St. Joe Branch of A., T. & S. F. R. R.

Seventy miners and ten helpers are given employment in this mine.

CRISPIN & WARD MINE.

Crispin & Ward operate a mine north of Richmond, on 70 acres of land owned by Mrs. E. E. Crispin. The mine shaft is 85 feet deep. Hoisting is done by horse power, and ventilation is produced by a furnace.

Upon examination of the underground workings, I found considerable bad air on the right hand side of a crooked road; I also noticed that the furnace was in a deplorable condition, filled up with ashes above and below the fire. I gave instructions to have the furnace cleaned out and repaired at the earliest possible date. I also instructed the manager to have the air course repaired at once.

The mine is operated by 8 miners and 1 top hand. Shipping connections are with the Santa Fe and Wabash R. R. by a spur switch. The product of the mine is shipped to St. Joseph and Kansas City. W. O. Ward, Richmond, Mo., is manager.

FOWLER COAL COMPANY.

This mine is known as the Isabella Coal mine, and is operated by the Fowler Coal Co. A. N. Fowler is president and manager. The mine is located two miles south of Richmond, on 160 acres of land owned by A. M. Fowler; has a shaft entrance 75 feet deep; steam power, and fan ventilation. Long wall and face track is the plan of working.

The coal seam averages 24 inches. I examined this mine on October 7, 1908, and found conditions good in all sections of the mine. The company employes 50 miners and 11 helpers. Edward Hotchkiss is foreman.

HUGHES MINE.

This mine is located 7 miles northeast of Richmond, on 156 acres of land owned by Amy and Newton Hughes. The mine has a shaft entrance 30 feet deep. Hoisting is done by horse power, and ventilation is produced by a furnace.

Since my last visit an air shaft has been sunk, and ladders placed in same, which makes the miner safe in case of fire or other accident to the hoisting shaft. Long wall and face track is the plan of working. The coal is of a good quality, and is sold to farmers in the vicinity of the mine. The coal seam will average 24 inches.

I found the mine and all safety appliances in good condition. E. R. Odell is the operator; postoffice, Richmond, Mo., R. F. D. No. 8. Twelve miners were employed.

GOOD & TURNER MINE.

This mine is located on a 258-acre tract of land owned by John Bissell, north of Orrick, at one time known as the Orrick Coal Mine. The mine has a shaft entrance 70 feet deep. Both steam and horse power is used in the operation of the mine, and work is done on the long wall plan.

A furnace supplies ventilation and is giving good results. All machinery and safety catches were in good order on date of visit, February 5, 1908. The product of the mine is consumed locally. D. W. Cringer of Orrick is manager of the mine.

MARTIN-HUBBELL-OSBORNE COAL CO.

This company operates four mines in Ray county, viz: Mines Nos. 3, 7, 10 and 22. The company has 400 acres of coal land leased. The officers of the company are: D. E. Martin, president; C. G. Hubbell, secretary and treasurer; C. H. Hubbell, general manager. Shipping facilities are by way of a belt line connecting with the Santa Fe and Wabash Railroads.

Mine No. 3, located two miles west of Camden, has a shaft entrance 60 feet deep. Steam power is used for hoisting the coal to the surface. A 10-foot fan furnishes ventilation, and a gasoline engine does the pumping. The coal is mined on the longwall plan, the coal seam averaging 18 inches.

I inspected this mine on July 10, 1908, at which time I found that heavy rains had filled the eastern portion of the mine with water, but a good pump is taking care of this trouble. The ventilation was good in all parts of the mine, and general conditions were good. Another inspection was made on December 31st, with the same satisfactory results.

Mine No. 7, located two miles west of Camden, has a shaft entrance 90 feet deep. Steam power for hoisting is used, and ventilation is produced by a fan. The plan of working the mine is the same as employed in No. 3.

My first visit to this mine during 1908 was on July 11th. I found the mine idle and no inspection was made. I again visited the mine on December 31st, and this time found 75 miners with 13 helpers at work in the mine. A thorough inspection of everything in and about the mine was made, and I found it to be in first-class condition.

Mine No. 10, located one and one-half miles west of Richmond, has a shaft entrance 110 feet deep. Ventilation is furnished by a furnace. This mine has been operated for 20 years. On date of inspection, July 2, 1908, I was glad to notice that the old tower and pit top had been remodeled and greatly improved, and that steam power had taken the place of horse power for the hoisting of coal to the surface. I found the mine well ventilated and all equipments and safety appliances were in good condition.

Mine No. 20 is located within the corporate limits of Richmond, northern section of the town. Entrance to the mine is by shaft; hosting is done by steam, and ventilation is by furnace.

The mine was only recently acquired by this firm, having formerly been operated by other parties. I visited the mine on March 4th. I found a new shaft sunk, equipped with steam hoisting. All ropes, cages and safety catches were in good condition.

I again visited this mine on December 19th, and was surprised to find electric mining machinery installed, the first to be installed in the Richmond coal field. A 75 K. W. dynamo generates power for three Morgan-Gardner mining machines. I also found that several new buildings had been erected around the mine.

Among other improvements I noticed also a new boiler, only recently installed. Everything in and around the mine was in tip top shape. On last date of inspection 30 miners with 20 helpers were employed.

MAPLE HILL COAL COMPANY MINE.

This mine is operated by the Richmond & Camden Coal Company of Richmond. The mine has a shaft entrance 90 feet deep. Steam hoist and pumping. Long wall and face track is the plan of working. The coal will average 20 inches.

Shipping connections with the St. Joseph branch of Santa Fe railroad. The mine is located at Swanwick.

I examined the mine on October 8, 1908, and found it in good condition, with the exception of the road to the escape shaft, which was very low. I called on the manager and asked that same be cleaned out as soon as possible. Twenty-five miners and five others were employed in the mine. John Gibson, Sr., is superintendent and manager.

McCORKENDALE MINE.

J. J. McCorkendale operates a coal mine five miles northeast of Hardin. The mine is a new one, opened during the summer of 1908, and is entered by a shaft 60 feet in depth.

The mine is equipped with horse power for hoisting. Ventilation is produced by furnace. On date of visit, December 21, 1908, I found the mine idle and no underground examination was made. Mr. McCorkendale owns 20 acres of land on which the mine is located.

JACOBS MINE.

This mine is located three miles east of Richmond, on 156 acres of land owned by S. D. Jacobs. The mine was formerly operated by David Pointer, but at present is operated by Ottman & Nelson.

The entrance to the mine is by shaft 65 feet deep. Hoisting is done by horse power and ventilation by natural means. The plan of working is long wall, with movable face track. The product of the mine is small, and is sold locally. I examined this mine on June 30th, and must say that the heavy rains prior to my visit made the mine look more like a lake than a coal mine.

I gave instructions for a new cage on the west side, to be installed at once, as I consider the one used dangerous.

Five miners and one top hand were employed in the operation of the mine. Charles Ottman is manager.

I again visited this mine on December 31st, and found mine in much better condition.

WM. PENCE COAL COMPANY.

William Pence operates and manages a mine north of Richmond, on 65 acres of land owned by Messrs. Fletcher, Graham and Pence. The mine shaft is 90 feet deep, hoisting is by steam, and ventilation is produced by furnace. I examined this mine on March 4, 1908, and found the ventilation all over the mine very poor, and I gave orders to have same improved. The mine scales and all safety appliances were in good working order.

I returned to the mine on June 17th, and still found the mine poorly ventilated. I concluded that a fan was necessary, and ordered the manager to install one and have same in operation by August 1st. I again visited the mine on August 3rd and found that my order to install a fan had not been complied with. I was told that this apparent neglect was due to the death of one of the mine owners, which interfered with the plans and intentions of the company to improve the mine. I renewed my order to put in the fan and extended the time to August 10th, and served notice that unless proper ventilation was provided by this time I would be compelled to close the mine. I also gave orders to reduce the number of men employed, and to work two shifts until the fan had been installed.

I again visited the mine on December 22, at the request of Mr. Thomas, chief coal mine inspector. The miners employed in this mine had complained to the district president and board members of the United Mine Workers' Union that mine was in bad condition. I found upon investigation that the air shaft had fallen in. This air shaft is in no way connected with the escape shaft. The smoke stack over the air shaft had been taken down for repairs, but the mine operators, finding the cost of repair too great, dispensed with the repair work, and ordered work resumed in the mine without smoke stack or furnace, and without ventilation of any kind.

Under the circumstances, I ordered the mine closed until same was put in good condition. To my surprise, I learned that evening that the miners were going to work in the mine the next day, the manager having promised to furnish good air in the mine. On the second morning, December 24th, the air shaft caught fire from the bottom, and in an effort to put out the fire by water, the air reversed, coming back on the men in the mine and driving them from the same. The mine is now idle. I have been forced to give more attention to this mine than has been given to any mine in the county. None of the instructions given Mr. Pence have been carried out. He has always had his own ideas, which proved worse than none, and on last date of inspection I made no suggestions, only demanding that the law be complied with.

PICKERING COAL COMPANY.

This company is incorporated under the laws of Missouri, and is capitalized for $5,000. The officers of the company are: Isador Pickering, president; George Pickering, secretary and treasurer; Harvey Pickering, superintendent. The company operates three coal mines in Ray county, employing in all about 150 men. The company ships the coal by the Wabash and Santa Fe railroads.

Mine No. 11 is located one mile west of Richmond on land owned by Mrs. Joe Pickering and A. K. Rayburn. The mine has a shaft entrance 100 feet deep, steam hoist and fan ventilation. On date of inspection, March 5, 1908, I found the interior of the mine in first class condition; all safety appliances and scales were in good working order. On a later visit, October 9, 1908, I ordered a door placed on the main south entry; otherwise mine was in a satisfactory condition.

Mine No. 9 is located on the same tract of land with mine No. 11. The mine has a shaft entrance 100 feet deep, steam hoist and fan ventilation.

There are six entries, three to the east, two west, and one north. All entries are high, dry, wide and clean, showing good management. Scales and safety appliances were in perfect condition.

I again visited the mine on October 24th, and found everything in very good shape, except a defect in the air circulation. I suggested to split the air current and to give each section of the mine a separate current.

Mine No. 4, is located two miles east of Camden. The mine has a shaft entrance 30 feet deep. The coal is worked on the long wall plan, with face track. The coal is hoisted from the mine by a steam hoist. A ten-foot fan furnishes good and abundant ventilation.

On date of visit, December 1, 1908, I found mine and all equipments in first-class condition.

RAY COUNTY COAL COMPANY.

This is a new mine, located one mile northeast of Richmond, on 569 acres of land owned by the company and others. All safety appliances are new and up-to-date. The shaft is 60 feet deep, and is equipped with steam power for hoisting. Long wall is the plan of working, with a movable face track. The coal will average 24 inches. Ventilation is furnished by a steam jet. Thirteen miners were employed on day of inspection, October 23, 1908. William Wilson is superintendent and manager of the mine.

RICHMOND & CAMDEN COAL CO.

A Missouri corporation, capitalized for $200,000. The officers of the company are: Geo. A. Hughes, president; W. A. P. McDonald, secretary; John Gibson, superintendent and manager. The company owns 1,570 acres of land, and in addition thereto, controls 630 acres by lease. Five different mines are operated by this company and 175 men are given employment. The coal is worked on the long wall plan, with movable face track.

Mine No. 1 is located west of Camden. The mine has a shaft entrance, steam hoisting equipage and fan ventilation. Examination was made on July 8th. The underground workings were in excellent condition, and ventilation was the best.

Among the improvements made since our last inspection, we noticed the following: Six new coal chutes to coal Santa Fe and Wabash trains; 1,500 feet of new 12-pound steel laid in the mine; tower and pit top repaired; engine room given a new roof and remodeled; new flue placed in one of the boilers.

During the heavy rains just prior to date of visit, quicksand in the shaft gave the company considerable trouble, but at this time the leakage had been stopped and no further trouble experienced. I found all safety catches, ropes, engine and scales in good condition. The foreman of this mine is James Harrison.

Mine No. 2 is located west of Camden, and has a shaft entrance. Hoisting is done by steam power; and the fan which ventilates mine No. 1 also ventilates mine No. 2. I made an examination of this mine on July 9th, and like mine No. 1, found everything in first class condition. The company experienced considerable trouble with water in the mine, but at the time of inspection, water was well under control. All cages, safety catches, ropes and scales were in good condition. Allen Cochran is foreman at this mine.

Mine No. 4, is located a mile south of Richmond, on the St. Joe Branch of the Santa Fe R. R. The shaft to this mine has a depth of 75 feet and is equipped with steam hoist. Ventilation is produced from a 12-foot fan, located at mine No. 5, a short distance away. I inspected mine on July 29th. Among the improvements I noticed that the shaft had been partly retimbered; buntins had been placed in the shaft from bottom to top; the tower was braced and repaired; 100 new boxes had been made and placed in the different mines of the company, and everything was in good shape in and around the mine.

A second inspection of this mine was made on November 2nd, with the same satisfactory results. John Rosewarn is the foreman.

Mine No. 12, located west of Richmond on the branch of the Santa Fe R. R., was inspected on October 10th, and found in excellent condition.

Mine No. 22, located south of Richmond, is another of the well managed and up-to-date mines of this company. I visited this mine on October 22nd, and was pleased to note the healthful and well managed condition of same. The foreman of this mine is Richard Winter.

WASHINGTON MINE.

This mine is located north of Richmond on the land owned by Mrs. S. L. Washington. The mine is entered by a shaft 100 feet deep. Hoisting is done by horse power, and ventilation is produced by a furnace. The coal seam is 24 inches in thickness, and is worked on the long wall plan, with a movable face track. The product is sold in Richmond and vicinity. On date of inspection, I found the mine in good condition, with five miners and one top hand employed. The mine was formerly operated by Rice & Gillis, but is now operated by Perry Rice of Richmond. I inspected this mine on June 18th, and again on December 12th, 1908, and found very satisfactory conditions prevailing.

DEAR MINE.

James B. Dear owns and operates a coal mine three miles north of Richmond. The entrance to the mine is by a shaft 60 feet deep. Hoisting is done by horse power. The shaft and all equipments were in good condition on date of visit, June 19, 1908.

I entered the shaft, and on reaching the bottom I was dropped almost to my knees in water. Not being a good swimmer, I came back to the top and no underground examination was made. The continued heavy rains put the mine out of business until the water was taken out. Five miners and one top man are employed in the operation of the mine. The product is sold to the milling company, the electric light plant and to farmers in and near Richmond.

I made a second inspection of this mine on December 17th, and found a change in ownership. The new proprietor is Thomas Shea of Richmond. All water found in mine on my first visit was removed, and mine is now in good condition.

SCHOOLER & BATES MINE.

Schooler & Bates operate a coal mine near Vibbard, on 304 acres of land owned by T. C. Smith. The mine is entered by a shaft 400 feet deep. Steam power is employed for hoisting. The coal seam is 24 inches thick, and is of good quality. The product is small and is all sold at the mine. There is no escape to the mine, and I permitted only five miners to be employed underground. I found the mine in good order. Roe Schooler is manager of the mine.

THOMPSON MINE.

Geo. W. Thompson operates a coal mine four and one-half miles north of Richmond. The entrance to the mine is by shaft 84 feet deep. Hoisting is done by horse power, and ventilation is produced by a furnace. Long wall, with movable face track, is the plan of working.

I made an examination of this mine on June 16, 1908, and found everything in and around the mine in good condition. The shaft and all safety appliances are new and in good condition. The product of the mine is sold in the neighborhood of Richmond. Three miners and one top hand were employed. I again visited the mine on December 17th, and was well satisfied with the conditions prevailing.

WHITMER COAL & MINING CO.

This mine is located two and one-half miles south of Richmond, on 70 acres of land owned by E. F. Whitmer. The mine is entered by a shaft 40 feet deep, and the product is hoisted by horse power. The mine has natural ventilation. The plan of working is the same as employed in other mines in and around Richmond. The coal seam will average 24 inches. The mine is operated by Phil Randall. The product is hauled from the mine in wagons and sold in Richmond and vicinity. Only six miners were employed on date of visit, November 2, 1908. I found the mine in good condition.

SUNDRY SMALL OPERATORS.

Ray county has a large number of small coal operators, who mine coal only during the fall and winter months, and sell the product to local consumers. Among this class of operators I examined the following mines:

JAMES N. WATSON MINE.

Located one mile east of Richmond. Shaft entrance, horse power, furnace ventilation. Mine is worked by Mr. Watson and his son. Condition of mine good. Examined on December 1st, 1908.

JOHN WOODROOF MINE.

A drift coal mine on land owned by the Ray County Coal, Brick and Tile Company. Three men were employed in this mine. The product is sold at Norborne. No fault to find with the manner of working. Date of examination, December 3, 1908.

JAMES LOVE MINE.

A drift mine located near Lakeview, on 80 acres of land owned by Bryant and Haney. The product of this mine is small, and is consumed at Norborne.

The coal in this mine is very faulty and irregular. I examined mine on February 6, 1908, and found conditions generally good.

T. J. LOEVEN MINE.

This is a small drift mine in the vicinity of Lakeview. Four miners are employed during the fall and winter months, and the output is consumed locally. The coal seam will average 16 inches. Date of inspection, December 21st. Conditions at that time good.

M. J. LOEVEN MINE.

This is a drift coal mine on 160 acres of land owned by M. J. Loeven. The long wall method of mining is used and four miners are employed. The product is sold in the town of Hardin. I visited this mine on December 24th, and found the mine in good condition.

L. E. JOHNSON MINE.

This mine is on 20 acres of land owned by W. L. Clark, near Lakeview. It is a drift operated on the long wall plan. The coal seam is thin and faulty. L. E. Johnson, the operator, employs five miners during the fall and winter. The product is hauled to Hardin and sold to local consumers. Date of inspection, December 21, 1908.

HUSTON MINE.

Fred Huston, whose postoffice address is Hardin, Mo., R. F. D. No. 3, operates a drift coal mine near Lakeview. He employes five miners during the fall and winter and sells the product of his mine to farmers in the neighborhood. This mine is worked on the long wall plan, with movable face track. Date of inspection, December 21, 1908.

HENRY HEISINGER

Operates a drift coal mine between Norborne and Hardin during the fall and winter months to supply home trade. Mr. Heisinger employes three miners. I visited his mine on December 23, 1908.

GRANT MINE.

A. Grant, Norborn, Mo., R. F. D. No. 4, operates a drift near Lakeview under same conditions and plan of working as other mines in this vicinity. Two miners are employed, and the product is sold locally. Date of inspection, December 24, 1908.

KING MINE.

John Doran operates the King Mine, three and one-half miles northeast of Hardin. The land on which the mine is located is owned by R. A. King. Four miners are employed. The coal seam averages 18 inches. Date of inspection, December 24, 1908.

DAUGHERTY MINE.

C. M. Daugherty operates a small drift mine near Lakeview during the fall and winter months. On day of inspection, December 23, 1908, four miners were employed.

COLLIER MINE.

J. W. Collier operates a drift coal mine on 45 acres of land owned by J. J. Kallenberger, four miles east of Hardin. Three miners are employed during the fall and winter months. Date of inspection, December 21, 1908.

ANDERSON MINE.

C. C. Anderson works a coal mine on the P. J. Keyes place, one mile east of Richmond. The mine has a shaft entrance 59 feet deep and is ventilated by a furnace. The coal is hoisted to the surface by horse power. The mine was operated only about two months during 1908. I inspected the mine on Nov. 2, 1908.

BALLARD MINE.

Charles Ballard operates a small mine four and one-half miles north of Hardin during the fall and winter months. The product is sold to local trade. Date of inspection, December 24, 1908.

BUCKLINGER MINE.

Frank Bucklinger operates a small mine (drift) on 20 acres of land owned by T. J. Loeven, near Lakeview. Only two miners are employed. The product is small and is consumed locally.

MULVANEY MINE.

A small drift mine, located on a 40-acre tract of land owned by Jerry Bryant. I inspected this mine on February 6, 1908. The plan of working is long wall, and movable face track. The coal seam is faulty and irregular. John Mulvaney, Hardin, Mo., R. F. D. No. 4, is manager of the mine, and four miners are employed.

CALNEN-BLAIR COAL CO.

This mine is located on 120 acres of land owned by William Shotwell, west of Richmond. The mine has a shaft entrance 100 feet deep, and steam power is used in the hoisting of the product from the mine. An 8-foot fan furnishes ventilation. I examined the mine on October 10, 1908, and found all cages and safety appliances, as well as the underground workings, in excellent condition.

Ten miners and three helpers were employed on date of visit. Andrew Blair is superintendent and manager; postoffice, Richmond, Mo.

VERNON COUNTY.

CARBON COAL COMPANY.

This mine is located near Panama in Vernon county on 100 acres of land owned by Mr. Lyons.

The mine has a shaft entrance 37 feet deep. Steam power is used. The mine is a new one, the shaft having been sunk in the spring of 1908, and on date of visit, July 28th, only a few miners were at work driving entry.

Room and pillar is the plan of working, and the coal is blasted off the solid. The mine has shipping connections with the Missouri Pacific railway by a spur switch. The coal seam will average 5 feet in thickness. E. H. Davis is manager. Address at Panama, Mo.

CENTRAL COAL AND COKE COMPANY.

This mine is known as mine No. 23, and is located near Panama in Vernon county. The entrance to the mine is by shaft 178 feet in depth. Hoisting is done by steam, and ventilation is produced by a 16-foot fan. The mine has shipping connections with the Missouri Pacific railway.

Work is done on the room and pillar plan, and the coal is blasted off the solid. I made an examination of this mine on July 28th, 1908, and found it in very fair condition. The underground haulage is such that it makes the coal very expensive to mine. Two steam engines in the mine; one drum and 14 mules provide haulage for 44 miners.

I was informed that before this report would appear in print the mine would be worked out. This is the only mine now being worked by this company in Vernon county. F. E. Doubleday is manager of mines, and F. E. Sample is foreman.

REPORTS OF
ACCIDENTS.
1908.

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COAL MINES.

FATAL.

JULY 21ST—Northwestern Coal and Mining Company, Bevier; R. W. Williams, age 31, married; occupation, miner. Fall of rock.

AUGUST 5TH—Northwestern Coal and Mining Company, Bevier; Joe Charfot, age 52, married; occupation, miner. Fall of coal. Injuries resulted in death three weeks later.

SEPTEMBER 2ND—Rombauer Coal Company, Novinger; John Gorman, age 75, married; occupation, miner. Instantly killed by fall of roof.

SEPTEMBER 21ST—Edw. Aull Coal Company, Lexington; Arthur Sherrow, age 16, single; occupation, miner. Instantly killed by fall of coal and slate.

SEPTEMBER 22ND—Northwestern Coal and Mining Company, Bevier; Wilhelm Julius, age 20, single; occupation, driver. Killed by mine car.

NOVEMBER 12TH—Dan Durham Mine, Jacksonville; Victor Kitchen (colored), age 21; occupation, miner. Instantly killed by fall of rock.

NOVEMBER 12TH—McCullough Mine, Moberly; Conrad Andrews, age 35, married; occupation, miner. Crushed to death by falling rock.

NOVEMBER 12TH—Roy E. Mitts, Amsterdam; age 21, single; farmer. Crushed to death by falling rock.

DECEMBER 15TH—Central Coal and Coke Company, Bevier; John Nizzi, age 28, single; occupation, miner. Fall of rock. Lived one hour after accident.

Northwestern Coal and Mining Company, Bevier; Felice Fiorenzi, age 32, single; occupation, miner. Instantly killed by fall of rock.

NON-FATAL.

JANUARY 8TH—McGrew No. 1, Lexington; R. F. McCorkindale, age 33, married; occupation, miner. Fall of roof. Sustained a broken nose, broken bone in left foot, and bruises on left cheek and eye.

JANUARY 10TH—Central Coal and Coke Company, Panama; Wm. D. Gallimore, age 40, married; occupation, cager. Left leg broken by mine car.

MARCH 4TH—Marceline Coal and Mining Company, Marceline; J. C. Tolley, age 48, widower; occupation, miner. Bruised by fall of slate.

FEBRUARY 17TH—Central Coal and Coke Company, Panama; Baily Lucas, age 22, single; occupation, miner. Trolley wheel ran over hand and wrist, fracturing second and third metacarpal bones, and crushing periosteum of carpal bones of inner side of wrist.

MARCH 9TH—Richmond-Camden Coal Company, No. 4, Richmond; William J. King. Caught foot and leg between two loaded boxes. Leg broken at ankle.

MARCH 18TH—Jones Coal Company, Mine No. 2, Rich Hill; W. C. Burns, age 29, married; occupation, weighman. Fell down shaft. Cut over right eye, and badly bruised.

MARCH 24TH—Marceline Coal and Mining Company, Marceline; Ed. Brentin, age 45, married; occupation, cager. Fall of rock from car. Ankle sprained.

JUNE 4TH—Pickering Coal Company, Richmond; C. L. Smith, age 56, married; occupation, miner. Leg broken by fall of coal.

JUNE 13TH—Central Coal and Coke Company; Bud Colman, age 29; occupation, driver. Hurt by mine car.

JUNE 19TH—Richmond-Camden Coal Company, Richmond; Solomon George, age 68, married; occupation, miner. Left leg broken by fall of shell rock.

JUNE 26TH—Marceline Coal and Mining Company, Marceline; Joe Meyers, age 45, married; occupation, road man. Car was being loaded with rock when a piece was thrown, striking Meyers on hand and splitting open the flesh on one finger.

JUNE 27TH—Marceline Coal and Mining Company, Marceline; Mart Spolen, age 40, single; occupation, miner. Ankle bruised and sprained by fall of coal.

JULY 2ND—Central Coal and Coke Company; George Davis; age 26; occupation, miner. Injured by fall of rock.

JULY 5TH—Central Coal and Coke Company; Chas. Lawson, age 29, married; occupation, water man. Struck in back by rock, fracturing his 9th rib on left side. Back and hips bruised.

JULY 10TH—Marceline Coal and Mining Company, Marceline; Henry McMillin, age 45, married; occupation, miner. Fall in room. Leg cut above knee.

JULY 10TH—Marceline Coal and Mining Company, Marceline; P. M. McCready, age 60, married; occupation, miner. Arm cut by fall of slate.

JULY 10TH—Marceline Coal and Mining Company, Marceline; Ollie Lower, married; occupation, miner. Coal fell on ankle, bruising and spraining same.

JULY 13TH—Marceline Coal and Mining Company, Marceline; August Abba, age 40, single; occupation, miner. Injured by fall of coal.

JULY 13TH—Marceline Coal and Mining Company, Marceline; Jack Sargent, age 35, married; miner helper. Arm slightly cut by fall of slate and coal.

JULY 13TH—Marceline Coal and Mining Company, Marceline; Jas. Walton. Leg bruised by fall of slate.

JULY 13TH—Central Coal and Coke Company; Gocomo Berncco, age 27; occupation, miner. Left clavicle fractured by fall of coal.

JULY 28TH—Northwestern Coal and Mining Company, Bevier; Joe Overby, age 38, married; occupation, timber man. Leg broken and hip injured by fall of rock.

AUGUST 11TH—Central Coal and Coke Company; J. W. Henry, age 27, single; occupation, miner. Injured by fall of rock.

August 13th—Central Coal and Coke Company; Tim Prince, age 24, single; occupation, driver. Two fingers mashed by mine car.

August 13th—Farmers' Coal Company, Higginsville; Joe Schellinger, age 60, married. Leg broken below the knee by fall of slate.

August 18th—Marceline Coal and Mining Company, Marceline; Clark Hardin. Fall of coal. Sprained back.

August 18th—Rombauer Coal Company, Novinger; Geo. Ross, age 21, single; occupation, driver. Caught by trip.

August 20th—Marceline Coal and Mining Company, Marceline; J. F. Sneider; occupation, superintendent and foreman. Fall of slate. Back sprained, and head and face bruised.

August 21st—Pickering Coal Company, Richmond; J. H. West, age 19, single; occupation, driver. Arm fractured between elbow and wrist by mine car.

August 25th—Star Coal Company; Harry Wilson, age 30; occupation, sinker. Collar bone broken twice by fall of rock.

August 29th—Diamond Coal Company, Corder; Montie Busby, age 18; occupation, driver. Right leg broken above knee by fall of coal.

September 4th—J. M. Ivie & Sons, Rockyford; Lewis Raphel, age 46, single; occupation, miner. Caught by cage. Slightly injured.

September 16th—Kierstead Mine, Higginsville; Alex Leach, age 17. Leg broken above the knee by fall of coal and slate.

September 30th—Pickering Coal Company, Richmond; William Conner, age 38, married; occupation, miner. Right leg fractured by fall of coal.

October 8th—Martin-Hubbell-Osborn Coal Company, Camden; James M. Tarwater, age 28, single; occupation, miner. Leg broken by fall of slate.

December 14th—Central Coal and Coke Company; Barney Teracona, age 35, married; occupation, miner. Injured by fall of rock.

December 31st—Fulton Coal Company, Fulton; Nicholas H. Ritter, age 40, married; occupation, pit boss. Left leg broken twice between knee and ankle by fall of coal.

REPORTS OF ACCIDENTS--1908.

LEAD AND ZINC, WESTERN DISTRICT.

FATAL.

January 18th—Bullfrog Mining Company, Joplin; Otto Stratton, age 17, single; occupation, machinist helper. Failed to alight from the tub when it reached the bottom of shaft, and when it started to ascend, he attempted to get out, and fell to his death at bottom of shaft.

February 4th—Coleman Brothers, Aurora; James A. Poston, age 27, married; occupation, miner. Instantly killed by fall of rock from roof.

February 4th—Joplin; Arlie Denton, age 16, single. Received injury while working in mine, which developed into peritonitis.

February 28th—Underwriters' Land, Webb City; W. Ratekin, age 33, single; occupation, machinist helper. Instant death by falling of rock in drift.

April 3rd—Underwriters' Land, Webb City; ——— Carter, married. Explosion of gas.

April 3rd—Missouri Girl Mine, Spurgeon; Dennis Hansford, age 23, single; occupation, shoveler. Fall of dirt from roof.

April 10th—Iroquois Mine, Joplin; Levi Sevier, age 35, married; occupation, ground boss. Pinioned in sump by boulder and drowned before help could reach him.

April 16th—Chitwood-Bessie Mine, Chitwood; U. C. Belch, age 35, married; occupation, miner. Fracture of skull by falling boulder resulted in death.

April 23rd—Ground Floor Mining Company, Joplin; Isaac M. Fields, age 50, married; occupation, miner. Returned too soon on shot, and was killed by explosion.

April 24th—Boston-Aurora Zinc Company, Aurora; Duff Wilkerson, age 31, married; occupation, ground boss. Fracture of skull and spine, resulting in death. Boulder fell from pillar.

April 26th—Express Zinc and Lead Mining Company, Neck City; J. Newton Kivett, age 33, married; occupation, ground boss. While pulling pipe from shaft the loosened clamps allowed pipe to fall, breaking timbers of platform on which work was being done, and precipitating Kivett into shaft. Instant death.

June 5th—Beasley Mill, Webb City; Tom Carmack, age 30, married; occupation, machine man. Injured by falling rock; death resulting five hours after accident.

June 6th—Springfield; Frank Duffey, age 23. Overcome by impure air, and was dead when found.

June 26th—Webb City; Earl Maness, age 25, married; occupation, miner.

Skull fractured by fall of water jug into shaft. He lived four days after the accident.

JULY 20TH—Red Dog Mine, Webb City; Sam Broam, age 34, married; occupation, powder man. Premature explosion of shot, followed by falling of rock, fatally injured Broam. He lived but a few hours after the accident.

JULY 20TH—Red Dog Mine, Webb City; Ora M. Gilmore, age 25, single; helper of powder man. Premature explosion of shot, followed by falling of rock, instantly killed deceased.

AUGUST 17TH—Old Crow Mining Company, Joplin; Kinsey Crow, age 25, married; occupation, driller. Fell down shaft 130 feet deep. When body was recovered life was extinct.

SEPTEMBER 16TH—American Mine No. 2, Prosperity; H. Cameron, single. Crushed to death under an immense boulder.

OCTOBER 3RD—Barr-Gloninger-Walsh, Webb City; George Smith, age 29, married; occupation, miner. Body blown to atoms by explosion of powder.

OCTOBER 3RD—Barr-Gloninger-Walsh, Webb City; Jasper Lee, age 35. Blown to atoms by explosion of powder.

OCTOBER 3RD—Barr-Gloninger-Walsh, Webb City; Robert C. Feland, age 47, married; occupation, mine superintendent. Instantly killed by explosion of powder.

OCTOBER 8TH—Carl Junction; Fred Temple, age 21, single; occupation, miner. Fell into shaft and struck wooden platform in sump. Lived a few hours after accident.

OCTOBER 19TH—Grace Mine, Chitwood; S. F. Crabtree, age 23, married; occupation, miner. Skull fractured by boulder, the injury resulting in death a few days later.

NOVEMBER 12TH—Blackwell Mine, Granby; N. T. Cole, age 54, married; occupation, miner. A tub was knocked into shaft, striking deceased on head and crushing skull.

NOVEMBER 16TH—Big Fly Mining Company, Joplin; George Workman, age 36, married; occupation, shoveler and tub man. In sending a can of dirt up shaft, the deceased failed to steady tub properly; it caught on the cribbing about 50 feet from bottom of shaft, causing a boulder to fall, striking deceased on head, and resulting in instantaneous death.

NOVEMBER 18TH—Colgan Mining Company, Joplin; William Luster, age 35, married; occupation, shoveler. Crushed by falling boulder.

NOVEMBFR 18TH—Mercantile M. and M. Co., No. 2, Duenweg; George Daniels, married; occupation, miner. Instantly killed by fall of boulder.

NOVEMBER 18TH—Amercan Beauty Mine, Webb City; H. Sparks, age 40; married; occupation, jig man. Adjusting belt while mill was running at full speed. Lost his balance, fell on roll pulley and was hurled to death.

NOVEMBER 19TH—Arkansas Mine, Carterville; Charles Riley, age 41, married; occupation, machine man. Explosion of shots.

NOVEMBER 19TH—Kohinoor Mine, Joplin; William Taylor. Scalded to death by boiler explosion.

NOVEMBER 24TH—Eureka Mine, Duenweg; William McCoy, hoister man. Fell 150 feet to bottom of shaft. Lived only a short time after body was recovered.

December 8th—Mammoth Zinc and Lead Works, Joplin; Herman Wheeler, age 28, married; occupation, tub hooker. Skull crushed by boulder.

December 22nd—Common Sense Mine, Porto Rico; Jesse Hurst, age 27, married; occupation, miner. Instantly killed by explosion caused by dropping fire from lamp into powder.

NON-FATAL.

January 4th—Keystone Mine, Webb City; Ed. Dipley; occupation, miner, and Frank Stokes, occupation, miner. Both went down into sump to recover pump, and stepped into water which had become heated from the exhaust pipe to almost boiling temperature. Both were badly scalded.

January 5th—Kansas City-Bradford Mine, Webb City; W. Tanner; occupation, tub rustler. Shive wheel fell into shaft. Scalp wound.

January 9th—Boston Get There Lease, Webb City; Richard Charum; occupation, miner. While being lowered into shaft, the hoister became unmanageable, Charum falling fifty feet, breaking the left leg at the thigh and crushing ankle bones.

January 15th—Grand Central Mine, Joplin; J. W. Pemberton; occupation, miner. Falling boulder. Three ribs broken.

January 21st—American Beauty Mine, No. 2, Duenweg; A. J. Bodine, age 30, married; occupation, shoveler; W. Siler, age 30, married; occupation, shoveler, and F. Sumner, age 30, single; occupation, shoveler. Were being lowered down shaft in tub when tub got away from hoisterman and dropped. Bodine had one leg broken; Siler had a leg broken, an arm dislocated, and was badly cut about the body, while Sumner, in addition to a broken leg, sustained internal injuries.

January 25th—Schoenherr & Walton, Joplin; Joe Rowden; occupation, ground man. Was caught by falling slab, which crushed his shoulder.

January 29th—Omega Mine, Joplin; Joe Martin, age 29, married; occupation, miner. A rock fell from roof, knocking Martin down stope a distance of about forty feet. His head and body was badly cut and bruised, and his lungs injured.

February 1st—Gibson Mine, Carterville; A. C. Ferguson; occupation, miner. A falling tub caught him on shoulder, causing a severe dislocation.

February 11th—Annalinda Mining Company, Carthage; R. L. Hilson. No particulars.

February 17th—Mercantile Metal Milling Company, Webb City; Will Graham; occupation, miner. Fell the entire depth of shaft, as the result of the hoisterman losing control. Suffered compound fracture of ankle and leg and lost several teeth.

March 5th—Consolidated Lead and Zinc Company, Carterville; J. E. Milligan. Car fell on leg, bruising and cutting it badly.

March 5th—Little Princess Mining Company, Webb City; C. A. Triplett. A boulder fell from side of shaft, striking him on head and shoulders, incapacitating him for further work the remainder of his life.

March—Express Lead and Zinc Company, Webb City; L. S. Kimberly.

Was thrown down shaft a distance of 180 feet by the breaking of a plank. Injuries of a serious nature.

MARCH 14TH—Red Dog Mining Company, Webb City; I. N. Anderson. A blast shot was put off without warning, and said Anderson was injured on head, neck and back by rock.

MARCH 16TH—Big Indian Mine Company, Alba; George Hickman. A heavy stick fell, breaking and crushing one hand.

MARCH—Jack Harvard Mining Company, Webb City; Stephen Rhae. No particulars.

MARCH 27TH—Juanita Mine, Joplin; Will Hite. Fell from pillar, a distance of about 50 feet, and rolled to the bottom of the stope. Left arm broken, and was also badly bruised.

APRIL 3RD—Gibson Mine, Webb City; A. Watkins. Was working as tub hooker, and had the misfortune of getting his hand caught between the bale of the tub and the hook. One finger of his left hand was severely crushed.

APRIL 16TH—Chitwood-Bessie Zinc Co., Joplin; Samuel Sowers, age 24, single; occupation, miner. Wall where men were working and drilling broke loose and partly covered said party.

APRIL 18TH—Big Three Mine, Joplin; A. J. Stockton. Particulars of accident not given. Stockton sustained a broken leg.

APRIL 21ST—Federated Mines and Milling Company, Alba; Andrew J. Danley; occupation, miner. Dirt and rock fell from roof and sides of drift. Head, shoulders and neck injured.

APRIL 28TH—Captain Mine, Joplin; H. Stevens. Wounded on head and shoulders by falling dirt.

MAY—Federated Mines and Milling Company, Alba; Horace Hollman; occupation, miner. Injured by material falling into shaft.

MAY—Dinger Mining Company, Joplin; C. H. Caudell; occupation, shoveler. A scantling fell from cribbing, striking him on head and shoulders.

JUNE—Egyptian Mine, Carterville; C. A. Honer. Buried under slab of dirt and boulders that fell from the roof of mine. Severely bruised.

JUNE 3RD—Mollie O. Mining Company, Joplin; Carl Vickers. Scalp cut and body bruised by fall of rock and earth.

JUNE 6TH—................, Springfield; A. L. Henson. Overcome by impure air.

JUNE 15TH—Electrical Zinc and Lead Mining Company, Webb City; C. H. Mason, age 30, single; occupation, driller; and Jos. Fry, age 28, married; occupation, helper. Dynamite exploded while squibbing hole. Mason was severely blistered. Fry sustained the following injuries: His eyes were destroyed, one hand was blown off, the other arm broken, and his face was cut.

JUNE 18TH—Elking Lead and Zinc Company, Webb City; Al. Maness. Fell into sump. Left arm injured and severe cuts on three fingers.

JULY 7TH—Ice Plant Mine, Webb City; Luther Alberts, age 25, single. Explosion. Legs and body bruised.

JULY—Jack Harvard Mining Company, Joplin; Joseph Bryson. Boulder rolled on him, badly lacerating his legs.

JULY—Grace Mining Company, Joplin; W. A. Rader. Boulder fell, injuring back and spine.

July 20th—Red Dog Mining Company, Webb City; Chas. Enright. Injured by accidental explosion of powder.

July 21st—American Beauty Mine, Webb City; T. L. Dickey. Struck by tub, which tipped over. Left leg broken.

August 7th—Ground Floor Mining Company, Webb City; "Raz" Medsker and George Carmack. Drilled into an old hole. Medsker lost one eye and was badly burned about the neck and body; Carmack was burned.

August 18th—Providence Mining Company, Webb City; W. S. Anderson. Knocked unconscious by falling boulder.

August 25th—Continental Zinc Company, Joplin; George Driscol. Struck on the back with a rock shot from a blast.

August 31st—Hennessey Mining Company, Chitwood; J. S. McAferty, Penn Fisher and Fred Workman. Hoister slipped and allowed tub containing men to drop. All sustained severe wrenches and bruises.

September 15th—American Mining Company, Joplin. James Cooper stumbled over a boulder in the ground, and his arm was badly lacerated and bruised. Otis Bayse caught his fingers between the hopper and a boulder, and the third finger of his right hand was crushed. E. T. Wade was caught under a boulder that fell from the roof and one of his toes was mashed.

September 16th—Oriole Mine, Joplin; C. Stilwell. Hoisterman fainted and lost control of tub, which was being lowered into mine, dropping Stilwell 65 feet. Stilwell sustained two compound fractures of the right leg.

September 16th—Good Shepherd Mine, Joplin; W. H. McClary. Skull fractured by falling boulder.

October—Continental Lead and Zinc Company, Joplin; Otto Cripps. No particulars.

October 7th—Vantage Mine, Joplin; J. Stewart. Falling rock produced fracture of skull.

October 7th—Barr-Gloninger-Walsh, Webb City; Jack Holderman; occupation, pumpman; E. G. Gibson, Chas. Wright and Chas. Hammick. All injured by explosion of powder.

October 8th—Yellow Dog Mine, Webb City; Barney Dorsey and Ed Cox, machine man and helper. Drilled into a shot which had not exploded. Dorsey lost one eye and was badly cut. Cox suffered an injury to one eye and was cut about the face.

October 18th—Lucky Budge Mine, Webb City; John Stoveall. Knocked from ladder by falling boulder and severely bruised.

October 22nd—Paragon Mine, Webb City; Ralph Graham; occupation, machine drill man. Caught by earth which fell from roof of mine. Left leg broken below the knee.

November 6th—Wolf's Heart Mine, Duenweg; Dan Bigelow. Skull crushed by falling boulder.

November—Mercedes Mining Company, Joplin; Chas. Sparrow; occupation, shoveler. Skull fractured by fall of boulder.

November 17th—Moark-Nemo Consolidated Mining Company, Joplin; Fred Steele; occupation, shoveler. Injured by explosion of squib shot.

November 18th—Kalitan Mining Company, Joplin; Rastus Hightower. Material fell into shaft, fracturing his skull.

November 18th—Arkansas Mine, Carterville; D. C. Dameron; occupation, hoisterman. A tub of dirt was being brought up out of mine. When it reached the hoister platform, the throttle on hoister broke, and Dameron was unable to regain control of the hoister in time to prevent the tub going up into the shive wheel. More than three hundred pounds of dirt were dumped back to the platform. Dameron's spine was injured by the falling rocks.

December 5th—Steadley Mine, Carthage; Jesse Angleton. Injured by falling boulder.

December 10th—Lucky Jack Mine, Joplin; William Hatcher. Explosion blew out partition wall, behind which he sought safety. Concussion of brain.

December 10th—Chitwood-Bessie Zinc Mine, Chitwood; Clark Atwood; occupation, drillman. Fall of slab from roof. Three ribs were torn loose and internal injuries sustained.

December 12th—Blair Mine, Joplin; E. B. Branham, superintendent of mine. Boulder fell in shaft, breaking bone in forearm.

December 16th—Winifred D. Mine, Joplin; Austin Stoute. Injured by falling boulder.

December 18th—Temagami Mine, Joplin; George T. Cunningham, miner. A boulder fell upon Cunningham's knee, cutting a gash in it.

REPORTS OF ACCIDENTS—1908.

LEAD AND ZINC, EASTERN DISTRICT.

FATAL.

JANUARY 21ST—St. Louis Smelting and Refining Company, Desloge; Henry Buxton, age 39, married; occupation, driller. Had some trouble in lighting holes, and stayed with them too long; was shot by a blast when coming out. Died February 2nd.

JANUARY 28TH—Desloge Consolidated Lead Company, Desloge; Walter J. Hammock, age 26, married; occupation, miner and blaster. Returned too soon on shots, and was killed by explosion.

AUGUST 31ST—Cherry Valley Iron Mines, Steelville; F. A. Becker, age 46, married; occupation, miner; and Otto Becker, age 40, married; occupation, miner. Returned too soon after firing shots, and were overcome by foul air. Both were dead when brought out of mine.

APRIL 22ND—Federal Lead Company, Flat River; Frank Smith, married; occupation, shoveler; and Mike Patridge, married; occupation, shoveler. Fall of rock.

MAY 27TH—Doe Run Lead Company, Flat River; Albert Childers, age 42, married; occupation, miner. Fall of rock.

AUGUST 25TH—St. Louis Smelting and Refining Company; Jno. Gibson, age 18, single; occupation, back hand on drill. Fatally injured by explosion, which was caused by drilling into a missed hole.

AUGUST 29TH—Doe Run Lead Company, Flat River; R. Counts, age 22, single; occupation, back hand on drill; and Dan Puckett, age 39, married; occupation, pumpman. Both were sitting near air drill when operators of machine accidentally drilled into a hole charged with dynamite. The discharge of dynamite killed the persons above mentioned.

SEPTEMBER 4TH—St. Joseph Lead Company, Bonne Terre; Charles Eaton, age 26, married; occupation, back hand on rock drill. Was cross-drilling a stope and drilled into a missed hole, causing an explosion. Eaton lived about 30 minutes after accident.

NOVEMBER 2ND—Federal Lead Company, Flat River; John Casebolt, age 40, married; occupation, miner. For some unknown reason the deceased dodged or leaned over the cage too far and head was crushed by timber.

NOVEMBER 30TH—Doe Run Lead Company, Flat River; Ira Austin, age 25, single; occupation, underground cager. Was caught between car and cage at bottom of shaft, and head was crushed.

NON-FATAL.

MARCH 18TH—Desloge Consolidated Lead Company, Desloge; Frank Buchanan, age 26, married; occupation, miner and blaster. Injured by premature explosion of shot.

SEPTEMBER 4TH—St. Joseph Lead Company, Bonne Terre; Ed Forshee, age 28, married; occupation, air drillman. Injured by drilling into an old shot.

DIRECTORY OF MINES

DIRECTORY OF THE MINES IN THE STATE OF MISSOURI.

LEAD AND ZINC—WESTERN DISTRICT.

JASPER COUNTY.

Owner of land.	Lessee.	Address.
Acme Lead & Zinc Co	Church, Mitchell M. Co	Webb City.
" " "	Jack Snipe M. Co	" "
American Z. & L. Co	Company Mines	Carterville.
" " "	Sway Back M. Co	"
" " "	Criterion M. Co	"
" " "	Alabama M. Co. No. 1 (Sub Les.)	"
" " "	Ford M. & M. Co	"
" " "	Rich Vale M. Co	"
" " "	Ohio Consolidated L. & Z. Co	"
" " "	McIntosh & Co	"
" " "	J. P. N. M. Co	"
Amsden, Mrs. E. F	Waddell Zinc Co	Carthage.
" "	Burgess & Co. (Sub. Les.)	"
Ashcraft-Reynolds	Providence M. & M. Co	Webb City.
" "	Engineers Zinc Co. (Sub. Les.)	Joplin.
Avondale Land & M. Co		Cincinnati, Ohio.
" " "	Jubilee Mining Co	Carl Junction.
" " "	Lehigh Zinc M. Co. (S. L.)	Joplin.
" " "	Moler-Smith L. & Z. Co. (S. L.)	Carl Junction.
" " "	Allen M. Co., A. R. (S. L.)	" "
" " "	Pee Wee M. Co. (S. L.)	" "
" " "	E. R. Hall, (S. L.)	Carthage.
Aylor, A. W	Eclipse Land & M. Co.	Alba.
" "	Stephens & Co. (S. L.)	Alba.
" "	Gray Fox M. Co. (S. L.)	"
" "	Mont Clair M. Co. (S. L.)	Webb City.
Aylor, J. W		Carthage.
" "	Lucky Budge M. Co	Carterville.
" "	Avondale L. & Z. Co	Webb City.
" "	Dominion L. & Z. Co	" "
Baker, H. M		Carthage.
" "	Vantage L. & Z. Co	Webb City.
" "	Spencer & Son (S. L.)	" "
Baker, L. H	821 Chestnut street	St. Louis.
" "	Reliance M. Co., No. 2	Webb City.
Barbee-Briggs-Connor & Campbell	Dinkelbihler, Jno. G	Joplin.
" " " "	K. & K. M. Co. (S. L.)	"
" " " "	Foster M. Co. (S. L.)	Cincinnati, Ohio.
" " " "	Grace Holmes M. Co. (S. L.)	" "
" " " "	Germania M. Co. (S. L.)	Joplin.
" " " "	Little Turtle M. Co. (S. L.)	"
" " " "	Bardee M. Co. (S. L.)	"
" " " "	Willow M. Co. (S. L.)	"

JASPER COUNTY—Continued.

Owner of land.	Lessee.	Address.
Bellville Land & M. Co	Midnight M. Co	Joplin.
" " "	Columbia Prospecting Co	"
Boston-Duenweg M. Co		Webb City.
" " "	Wilson, Alan S	Joplin.
Bowen, Nancy et al		Alba.
" " "	Federated M. & M. Co	Joplin.
" " "	Dana M. Co. (S. L.)	Webb City.
" " "	Isabel M. Co. (S. L.)	" "
Bradford-Kansas City Zinc Co		Joplin.
" " " "	Daylight M. Co	Webb City.
" " " "	Dinger M. Co	" "
" " " "	Disbrow M. Co	"
" " " "	Bird Dog M. Co	" "
Brooks, R. F. Estate		Carthage.
Buller & McGregor	Gammon, Lichliter & Cummings	"
" " "	Double Quick M. Co. (S. L.)	"
Burgner-Jones-Coleman	1020 N. Y. Life bldg	Kansas City.
" " "	Rochester M. Co	Webb City.
" " "	Ohio L. & Z. Co	" "
" " "	Lycan Stillwell	" "
" " "	S. F. Clark	" "
Byrd, Chas. A	Big Stick M. Co	" "
" " "	Good M. Co. (S. L.)	" "
" " "	J. F. Robinson M. Co. (S. L.)	" "
" " "	Bird Dog M. Co. (S. L.)	" "
" " "	Integrity M. & M. Co. (S. L.)	Joplin.
" " "	Glass L. & Z. Co	"
" " "	Over Yonder M. Co. (S. L.)	"
" " "	Old Dominion M. Co	"
Carter Estate		"
" "	Big Stick M. Co	Webb City.
" "	Integrity M. & M. Co. (S. L.)	Joplin.
" "	D. J. Young & St. Paul M. Co	Ft. Smith, Ark.
" "	McDonald-Wallace & Co	Carterville.
Carrick & Gage		Diamond.
" "	Log Cabin M. Co	Independence.
" "	Sewell & Co. (S. L.)	Denver, Colo.
" "	Saddle Horse M. Co. (S. L.)	Webb City.
Campbell, Jas		St. Louis.
" "	Chicago-Joplin M. Co	Joplin.
Center Creek M. Co		Webb City.
" " "	Mercedes M. Co	" "
" " "	D. C. McCroney & Co	" "
" " "	Morgan 40	" "
" " "	Beasley Mill	" "
" " "	Good Shepherd M. Co	" "
" " "	South Town M. Co	" "
Chase, F. A		Providence, R. I.
" "	Queen City M. Co	Carthage.
" "	Royle M. Co	Duenweg.
" "	L. C. Sly (S. L.)	Carterville.
" "	C. Beachwood (S. L.)	Duenweg.
" "	Gibbs & Co	Joplin.
Chew, Clara B. & Phil		St. Louis.
" " "	Mercantile Metal M. Co	Webb City.
" " "	Federated M. & M. Co. (Gussie K. Mine)	Joplin.
" " "	Lucky Abe M. Co. (S. L.)	Webb City.
" " "	Webb & Co. (S. L.)	Joplin.
Chinn, Mrs. E. J	J. W. & B. C. Aylor (Eleventh Hour M. Co.)	Webb City.
" " "	Belles & Co. (S. L.)	Prosperity.

JASPER COUNTY—Continued.

Owner of land.	Lessee.	Address.
Chinn, Mrs. E. J.	McCauer & Co. (S. L.)	Prosperity.
" " "	F. L. Kenrick (S. L.)	Webb City.
" " "	C. C. Hume (S. L.)	" "
" " "	John Hudson (S. L.)	" "
" " "	Big Moon M. Co. (S. L.)	" "
" " "	J. G. Doane	Joplin.
" " "	Acorn M. Co. (S. L.)	Prosperity.
Claycomb, S. H.	Federated M. & M. Co.	Joplin.
" " "	General L. & Z. Co.	"
Connor Estate	McKinley M. Co.	"
" "	Luna M. Co.	"
" "	Consolidated L. & Z. Co.	"
" "	Plutocrat M. Co.	"
" "	Croesus M. Co.	"
" "	Mt. Ararat M. Co.	"
" "	Ten O'Clock M. Co.	"
" "	Yates & Joseph	"
" "	Cherokee M. Co.	"
" "	Monte Cristo M. Co.	"
" "	Nolan Prospecting Co.	"
" "	Wilgo M. Co.	"
" "	Good Friday M. Co.	"
" "	Katie C. M. Co.	"
Connor Realty Co.	Prairie Chicken M. Co.	"
" " "	Long M. Co.	"
" " "	Yale & Barbee M. Co.	"
" " "	Hancock Land Co.	"
" " "	Black Diamond M. Co.	"
Continental Z. Co.	Glendale M. Co.	"
" "	Kohinoor Z. Co. (3 plants)	"
" "	Federated M. & M. Co.	"
" "	Jack Harvard Z. M. Co.	"
" "	Linderman Z. Co.	"
" "	Jack Harvard Z. M. Co.	"
" "	Brown M. Co.	"
" "	Temagami M. Co.	"
" "	Dorothy M. Co.	"
" "	Hoboken M. Co.	"
" "	Little Pearl Z. Co.	"
" "	Wild Pat M. Co.	"
" "	Haymer & Co.	"
" "	R. E. Love	"
" "	Fort & Co.	"
Cox M. Co.		"
Crown Crest Z. & L. M. Co.	Eureka M. Co.	"
" " " "	Moulder & Co.	"
Daugherty-Davey-Kane and McMillan R. & M. Co.	Old Dominion M. Co. No. 3	Carthage.
" " " " "	Sailsburg M. & M. Co.	Joplin.
" " " " "	Wood, Wallace & Co.	"
" " " " "	J. Arnagain & Co.	"
" " " " "	Shrive & Wilbert	"
" " " " "	Brewer-Black & Co.	"
" " " " "	Baldwin & Co.	"
Daugherty Est. Ja. Daugherty et al.		Carthage.
" " " "	Charter Oak M. Co.	Joplin.
" " " "	Cadmus L. & Z. Co. (S. L.)	Kansas City.
" " " "	Stout & Co. (S. L.)	Carterville.
Davey-Daugherty & Daugherty Est.		Carthage.
" " " "	Whitley & Atherton	"
" " " "	Irwin & Co.	"
" " " "	Hutt & Co.	"
" " " "	L[illegible]	"

JASPER COUNTY—Continued.

Owner of land.	Lessee.	Address.
Davey, Thos. N		Carthage.
" "	Vesuvius M. Co	Webb City.
Elliott, C. E	Old Judge M. Co	Oronogo.
Empire Zinc Co	Southern Lead & Zinc Co	Joplin.
" "	Various lessees	"
Excelsior Z. & L. Co		Joplin.
" " "	Battin & Co	Carl Junction.
Ferrington et al	J. C. Ammerman	Joplin.
" "	Old Possum M. Co. (S. L.)	"
Federated M. & M. Co		Joplin.
Fox Heirs	Red Fox M. Co	Oronogo.
" "	Varner & Co. (S. L.)	"
" "	West M. Co. (S. L.)	"
Fullerton M. Co	Luke & Ash	Carthage.
" "	Gibson M. Co. (S. L.)	Webb City.
" "	Ruby M. Co. (S. L.)	Carthage.
General Z. & L. Co	Federated M. & M. Co (2)	Joplin.
" " "	Goodrich Mine	"
" " "	George H. Mine	"
" " "	Eleven O'Clock M. Co	"
" " "	Twelve O'clock M. Co	"
Goucher, D. R		Carthage.
"	Ravenswood M. Co	Sarcoxie.
Granby M. & Smelting Co	Amalgamated Z. & L. Co	Joplin.
" " " "	Bay State Z. M. Co	"
" " " "	Underroof M. Co	"
" " " "	Omega M. Co	"
" " " "	Lounetta M. Co	"
" " " "	Goldfield Velvet Cons. M. Co	"
" " " "	Williams M. & M. Co	"
" " " "	Grace Zinc Co	"
" " " "	Conqueror Z. Co	"
" " " "	Theurer & Kennedy	"
" " " "	Gravity Mlg. Co	"
" " " "	La Grande M. Co	"
" " " "	Burress Sludge Co	"
" " " "	Postal L. & Z. Co	"
Granby M. & S. Co., Oronogo		St. Louis.
" " " " "	Oronogo Circle M. Co	Oronogo.
" " " " "	Aurora Circle M. Co	Oronogo.
" " " " "	John W. Sweet	Oronogo.
" " " " "	Oronogo M. & Dev. Co	Oronogo.
Ground-Irwin	First National M. Co	Carthage.
" "	Millard M. Co	"
" "	Egyptian M. Co	"
" "	Provident M. Co	"
" "	Chicago-Joplin No. 1	Joplin.
" "	Lucky Tom M. Co	"
Ground, J. W	Chas. Eakman & Co	"
" "	Emperor L. & Z. Co	"
Grundy Realty Co	Duplex M. Co	Carthage.
" " "	Short Stop M. Co	"
Gund M. Co	Greer M. Co	Webb City.
Guinn L. & Z. Land	Mercantile Metal M. Co	" "
" " "	Osceola M. Co	" "
" " "	Electrical L. & Z. Co	" "
" " "	Ground Floor M. Co	" "
" " "	Ice Plant M. Co	Carthage.
" " "	McCroskey & Sanford	Webb City.
" " "	Rhea L. & Z. Co	Carterville.
" " "	Home Run Z. Co	Webb City.
Hall Heirs	R. L. McGee & Co	Duenweg.

JASPER COUNTY—Continued.

Owner of land.	Lessee.	Address.
Haworth, Jas		Alba.
" "	Hannum & Co	Carthage.
" "	O. K. Mining Co. (S. L.)	"
Heist, Thos. H		Philadelphia, Pa.
" "	Lucky May M. Co	Joplin.
Johnson, A. C. & W. E	Grand Central M. Co	"
" " "	Lichliter M. Co	"
John Jackson Inv. Co		St. Louis.
" " "	Keno M. Co	Joplin.
" " "	Katydid M. Co	"
" " "	Joplin-Kentucky Z. Co	"
" " "	Robert H. M. Co	"
" " "	Fred H. Rogers Est	"
" " "	Kronprinz M. Co	Kansas City.
" " "	Cyclone M. Co	Joplin.
" " "	A. B. C. M. Co	"
" " "	Eureka L. & Z. M. Co	"
Jones, Ruth		Kansas City.
" "	Stevison, Jones & Co	Webb City.
" "	Enderline & Mathis (S. L.)	Duenweg.
" "	Moore & Co. (S. L.)	"
Joplin Consolidated M. Co.	B. F. Wurzel	Joplin.
" " " "	Jas. Twitchell & Co	"
" " " "	Parker & Taylor	"
" " " "	Carpenter, Morris & Clary	"
Judge Douglas		Kansas City.
" "	R. K. Pitkin	Joplin.
" "	Montpelier M. Co. (S. L.)	"
Kelley Estate		New York, N. Y.
" "	H. B. M. Co	Webb City.
" "	Carbondale M. Co. (S. L.)	Webb City.
Kelley, Albert T		New York, N. Y.
" "	White Dog M. Co	Joplin.
Lambert, Clarence et al	Osceola M. Co	Joplin.
" " "	Conqueror M. Co	"
" " "	Symmes M. Co	"
Lanyon, R. H	Luke & Brown, No. 3	Joplin.
" "	Second National M. Co. (S. L.)	Albany.
" "	Mary Madge Mine (S. L.)	Chrissman, Ill.
" "	Edwina M. Co. (S. L.)	Alba.
" "	Robertson & Allington (S. L.)	"
Leonard Realty Co	Chitwood, Bessie M. Co	Joplin.
" " "	Kimberly M. Co	Evansville, Ind.
" " "	Old Time L. & Z. Co	Joplin.
" " "	Bay State M. Co	"
" " "	Northern M. Co	"
" " "	Joplin Reduction Co	"
" " "	Stripped Stocking Co	"
Leckie, W. M	Missouri Standard M. Co	"
Luscombe Land		Carthage.
" "	Edgar County M. Co	Joplin.
" "	Federated M. & M. Co. (S. L.)	"
Luke, Ash, Stickney & Boggess		Carthage.
Montgomery L. & Z. Co		Pattstown, Pa.
" " "	Hemphill M. Co	Joplin.
" " "	O. E. Meade & Co. (S. L.)	"
" " "	Three Johns M. Co	"
" " "	Kellogg M. Co	"
" " "	Sterling M. Co	"
" " "	Polland Co	"
" " "	Vance Co	"
Mattes Bros	Thanksgiving M. Co	"

JASPER COUNTY—Continued.

Owner of land.	Lessee.	Address.
Mayes Mfg. Co		Joplin.
Miami Realty Co	Herald Z. & L. Co	"
Missouri L. & Z. Co		"
Missouri Zinc Fields Co	Chas. T. Orr	Webb City.
Moonshine Land	B. F. Wurzel	Joplin.
Mossback M. Co	Rob Roy Z. M. Co	"
Musselman, H		Lanagan.
"	Reliance, No. 1	Joplin.
"	Winifred M. Co	"
Norton, E. H		Platte City.
" "	E. L. Anderson	Joplin.
" "	Nortonia M. Co. (S. L.)	"
O'Keefe, Eugene	W. T. Hadley	Carthage.
" "	Gascorgne & Co	"
Old Colony L. & Z. Co		Boston, Mass.
" " "	Gibson & Co	Joplin.
Paomo M. Co	J. E. Cofer	"
" "	Smith & Co	"
" "	W. McDermand	"
" "	Power M. Co	"
" "	E. Smith	"
" "	Burress & Co	"
Pittsburg, Mo. Z. & L. Co	Missouri Metals Corp	"
" " " "	Federated M. & M. Co. (Baltimore)	"
" " " "	Federated M. & M. Co. (Mandarin)	"
" " " "	Mabel M. Co	Joplin.
" " " "	Harrison M. Co	"
" " " "	Theurer & Co	"
" " " "	Eclipse Mfg. Co	"
" " " "	North Sludge Co	"
" " " "	All Jack M. Co	"
Porter-Gilchrist Realty Co		"
Rabbit Foot Z. M. Co		New York, N. Y.
" " "	Merrick T. Esterbrook	Joplin.
Reliance M. Co., No. 3		Webb City.
" " "	Express Z. & L. M. Co	Neck City.
" " "	Federated M. & M. Co	Joplin.
" " "	Annalinda M. Co	"
" " "	B. L. Bartholow	"
Riesling Estate		"
" "	Osceola M. Co	Webb City.
" "	Waneta M. Co	Joplin.
Rex M. & S. Co	Greencastle M. Co	"
" " "	Benton County M. Co	"
" " "	Belmont M. Co	"
" " "	Sycamore M. Co	"
" " "	Quality M. Co	"
" " "	Ideal M. Co	"
" " "	A. H. Freeman M. Co	"
" " "	Sergeant & Co	"
" " "	G. L. Stineman	"
" " "	Carter & Co	"
Robb, John B	J. M. Short	"
" "	Mary Ellen Co	"
Rochester Land & Leasing Co	Red Dog Mine	Webb City.
" " " "	Bull Dog M. Co	Webb City.
" " " "	Jasper Sludge Co	" "
" " " "	C. C. & H. M. & M. Co	" "
" " " "	Federated M. & M. Co	Joplin.
" " " "	Edgar-Carl Eclipse Lease	Webb City.
" " " "	J. Wilson (S. L.)	Carterville.
" " " "	Jackson & Co. (S. L.)	"
" " " "	Crocus Hill M. Co	Joplin.

JASPER COUNTY—Continued.

Owner of land.	Lessee.	Address.
Roaring Springs L. & M. Co	Conservative L. & Z. M. Co	Joplin.
" " " "	A.-No. 1 M. Co	"
" " " "	L. M. Gardner & Co	"
" " " "	Keystone M. Co	"
Shifferdecker, Chas		"
" "	F. H. Evans	Norwalk, O.
" "	Paragon M. Co. (S. L.)	Joplin.
" "	Old Dominion M. Co	"
" "	Alice of Old Vincennes M. Co	Vincennes, Ind.
Shoemaker. E. B	Clark & Shoemaker	Joplin.
" "	Mocking Bird M. Co. (S. L.)	"
Smith Estate	Moler-Smith L. & Z. Co	Carl Junction.
South Joplin L. & Z. M. Co	Magnolia M. Co	Joplin.
" " " "	Ruthalta M. Co	"
" " " "	Patton & Co	"
Sponable, F. M	East Alba M. Co	Alba.
" "	Federated M. & M. Co. (S. L.)	Joplin.
" "	Elking L. & Z. Co. (S. L.)	Joplin.
Staples Land	Sullivan & Co	"
" "	E. E. Johnson	"
Stevison-Rogers L. & Z. Co		Webb City.
Swartz, W	Rusk, Shelton & Co	Joplin.
Taylor, Mrs. Lulu D	Old Dominion M. Co	"
Trinity Z. & L. S. Co		Carthage.
" " "	Criterion M. Co	Joplin.
" " "	Whitsett M. Co. (S. L.)	"
" " "	Beers Syndicate	"
" " "	Meadville M. Co. (S. L.)	Carthage.
" " "	Unex L. & Z. Co	Joplin.
" " "	Caldwell-Allen M. Co	"
United Zinc Co	Conqueror Z. & L. Co	Joplin.
" "	Geo. H. Playter, Trustee	"
" "	King & Queen M. Co	"
" "	C. W. Theurer & Co	"
Underwriters Land Co		Carthage.
" " "	Golden Glow	Webb City.
" " "	American Beauty M. Co	" "
Venango Royalty Co	Penn Zinc Co	Franklin, Pa.
" " "	Evansville M. Co., (S. L.)	Neck City.
" " "	Utopia M. Co. (S. L.)	" "
" " "	B. F. Bartholow (S. L.)	" "
Walker, J. J	Sayers M. Co	Duenweg.
Ware, Bowman & Scott		Jerseyville, Ill.
" " "	Elkins	Webb City.
" " "	Oakwood M. Co	" "
Wheeler, J. M		Alba.
" "	Mrs. E. A. Norris	Joplin.
" "	Toreador M. Co. (S. L.)	"
Weyman, Henry	Bash Dev. Co	"
" "	Red Fox M. Co. (S. L.)	Webb City.
What Cheer Z. Co		Providence, R. I.
" " "	Boston Get There Z. Co	Webb City.
Wysbrod, E. V		Joplin.
Yale Land	Yale & Barbee	"
Zeta L. & M. Co		Independence.
" " "	Clark Craycroft	Joplin.

LAWRENCE COUNTY.

Owner of land.	Lessee.	Address.
Boston-Aurora Z. Co		Webb City.
Buddicke Estate		St. Louis.
" "	Stone & Ripper	Aurora.
Cleveland-Aurora M. Co		Cleveland, O.
" " " "	W. E. Stair	Aurora.
" " " "	King & Co	"
" " " "	Mackey & Co	"
" " " "	Arend, Knowles & Co	"
" " " "	Baker-Humphrey & Co	"
" " " "	W. H. Hunter & Co	"
" " " "	Jerry Phillips	"
" " " "	Bailey & Co	"
" " " "	Wallace & Co	"
Decatur L. & Z. Co	Griffith & Co	"
Federal L. & Z. Co		Webb City.
" " "	N. Arend et al	Aurora.
Jones, E. C	Mo. Hydraulic M. Co	"
" "	Little Betty M. Co	"
" "	Pronger & Vale	"
Kentucky M. Co		Galveston, Tex.
Milton M. Co		Aurora.
Ronegh & Fischer		Hollywood, Cal.
" "	Scott, Coleman & Co	Aurora.
Rough, F. A		Chicago.
" "	Scott, Coleman & Co	Aurora.
Robberson, Mrs. E. J		Springfield.
" " "	M. L., J. W. and U. L. Coleman	Aurora.
Scott, Coleman & Co	Qualls & Co	"
Sphalerite M. Co	Summit City M. & M. Co	Aurora.
" "	Apple & Co	"
" "	Pitts & Co	"
" "	Crowell & Co	"
" "	Carter & Co	"
" "	Rickman & Co	"
" "	Hargis & Co	"
" "	King & Witherspoon	"
" "	Witherspoon & Mills	"
" "	Elrod & Co	"
" "	Wells & Co	"
" "	Morgan & Co	"
United Zinc Co		Joplin.

GREENE COUNTY.

J. Reitz		Mumford.
"	Badger L. & Z. Co	Springfield.
Daisy M. & M. Co		Springfield.
" " "	W. Morton Jones, Jr	Rochester, N. Y.

NEWTON COUNTY.

Owner of land.	Lessee.	Address.
Allen, J. W.		Joplin.
" "	Sunrise M. Co.	Spring City.
" "	Lone Hickory M. Co.	" "
" "	Oak Ridge M. Co.	" "
" "	Big Chief M. Co.	" "
" "	Show Me M. Co.	" "
" "	Fairview M. Co.	" "
Aylor, B. C.		Webb City.
" "	De Masters M. Co.	Racine.
" "	J. Aikens (S. L.)	Joplin.
" "	T. Hyme (S. L.)	"
" "	H. C. Doolittle (S. L.)	"
" "	T. Tyndall (S. L.)	"
" "	F. Hocker (S. L.)	"
Bucklen & Wills	Hub Combination M. Co.	Neosho.
" "	Hub M. Co.	"
" "	Missouri Girl M. Co.	"
" "	Log Cabin M. Co.	"
Bucklen, H. E.		Chicago.
" "	Wolverine Con. M. & Dev. Co.	Joplin.
" "	Craig & Walter (S. L.)	Spurgeon.
Davis, J. B. & N. Y.		Neosho.
" " "	Mears M. Co.	Granby.
" " "	Penn. Dev. Co.	Joplin.
" " "	Maston M. Co.	Granby.
Granby M. & S. Co.		St. Louis.
" " "	Katy M. & M. Co.	Granby.
" " "	Golden Rule M. & M. Co.	"
" " "	Fortune Teller M. & M. Co.	"
" " "	Little Boss M. Co.	"
" " "	Mascot M. Co.	"
" " "	Estewawa & Home M. Co.	Spurgeon.
Hogue Land	W. V. Hogue	Wheeling, W. Va.
" "	T. J. McKinney	Granby.
Howard M. Co.		Chicago.
" "	Duquesne L. & Z. Co.	Neosho.
Kelley & Schemerhorn		Joplin.
" "	Russell & Co.	Neosho.
McCown Estate		Philadelphia, Pa.
" "	Adam Scott	Joplin.
Newman Land	R. G. Milne	"
" "	C. R. Mitchell	"
" "	W. E. Foreman	Joplin.
Ohl, E.		Pittsburg, Pa.
"	Empire Zinc Co.	Joplin.
"	McClelland & Co. (S. L.)	Sarcoxie.
"	C. & S. M. Co. (S. L.)	"
"	A. F. Hartz (S. L.)	"
"	Bond & Co. (S. L.)	"
Owen, Etta H.	Clark Craycroft	Joplin.
Saginaw M. Co.		"
" "	L. McMullen	Granby.
" "	James Durbin	Granby.
St. Paul M. Co.	Alladin M. Co.	Joplin.
" " "	Ralston & Co.	"
" " "	Dahnke & Pointer	Granby.
Shifferdecker, C.		Joplin.
"	Four Hundred Pros. Co.	Neosho.

LEAD AND ZINC—EASTERN DISTRICT.

ST. FRANCOIS COUNTY.

Name of Company.	*Postoffice Address.*
Desloge Consolidated Lead Co.	Desloge
Doe Run Lead Co.	Doe Run
Federal Lead Co.	Flat River
St. Joseph Lead Co.	Bonne Terre
St. Louis Smelting and Ref. Co.	St. Louis

MADISON COUNTY.

Name of Company.	*Postoffice Address.*
Eastern Lead Co.	Fredericktown
Madison Lead and Land Co.	St. Louis
Mine La Motte L. & S. Co.	Mine La Motte
North American Lead Co.	Fredericktown
Wheeling Tailing Mill	Mine La Motte

WASHINGTON COUNTY.

Name of Company.	*Postoffice Address.*
Bugg Mercantile Co.	Potosi
Higginbotham & Sons	Fertile
Long, Jas.	Potosi
Nina Realty Co.	St. Louis
Point Milling Co.	Mineral Point
Renault Lead Co.	St. Louis
Rose C. C.	Sullivan
Southeast Mo. Lead Co.	Potosi
Washington L. & M. Co.	St. Louis

FRANKLIN COUNTY.

Name of Company.	*Postoffice Address.*
Rock Island M. Co.	Leslie

JEFFERSON COUNTY.

Name of Company.	*Postoffice Address.*
Valle Mining Co.	Valles Mines

CRAWFORD COUNTY.

Name of Company.	*Postoffice Address.*
Mo. Copper Mountain M. Co.	Sullivan

COAL MINES.

ADAIR COUNTY.

Name of Company.	*Postoffice Address.*
Big Creek Coal Co.	Kirksville
Consolidated Stahl Coal Co.	Stahl
Great Northern Fuel Co.	Novinger
Harl Coal Co.	Kirksville
Hazel Creek Coal Co.	Novinger
Ideal Block Coal Co.	Stahl
Ivie, J. M. & Sons	Kirksville
Kansas City Midland Coal Co.	Novinger
Lee, John	Connelsville
Manufacturers Coal & Coke Co.	Connelsville
Rombauer Coal Co.	Novinger

AUDRAIN COUNTY.

Name of Company.	*Postoffice Address.*
Audrain Coal Co.	Vandalia
Bevan Coal Co.	Laddonia
Davis & Watson	Columbia
Davidson, Henry	Laddonia
Edwards, J. A.	Centralia
Hammett, Ed.	Vandalia
Mississippi Glass Co.	St. Louis
Martinsburg Coal & M. Co.	Martinsburg
Standard Coal Co.	Vandalia

BARTON COUNTY.

Name of Company.	*Postoffice Address.*
Betz Bros.	Liberal
Bogartz, Wm.	Minden Mines
Breivogel, G. E.	Liberal
Brooks Bros.	Minden Mines
Cackley, J. F.	Milford
Clark Bros.	Lamar
Correlli Coal Co.	Joplin
Cross, J. M.	Milford
Creekmore, W. P.	Liberal
Davis Coal Co.	Mulberry, Kansas
Geivet, W. H.	Liberal
Gray, Geo. W.	Pittsburg, Kansas
Hembree, J. T.	Fuller, Kansas
Imperial Coal Co.	Englevale, Kansas
Lawrence, Frank	Milford
Lasley, W. B.	Liberal
Lavery Coal Co.	Liberal
Mulkins, T. E.	Milford
Orahud, A. J.	Lamar
Orahud, Wm.	Lamar
Peck & Brumett	Lamar
Perry, A. J.	Golden City
Pullen & Sons Coal Co.	Minden Mines

BARTON COUNTY—Continued.

Name of Company.	*Postoffice Address.*
Rector, G. W	Milford
Rector, W. B	Milford
Stephenson, J. J. Coal Co	Pittsburg, Kansas
Stone, C. T	Milford
Wear Coal Co	St. Louis
Western Coal & M. Co	St. Louis

BATES COUNTY.

Name of Company.	*Postoffice Address.*
Ayer, U	Rich Hill
Atlas Coal Co	Rich Hill
Ackerman, J. T	Hume
Arbogast, D. H	Foster
Carr Coal Co	Rich Hill
Clark-Heckadon Coal M. Co	Foster
Cook & Rankin	Foster
Cooper & Wilson	Foster
Decker, H. W	Amoret
Dunkerly Coal Co	Worland
Duzan, J. M	Sprague
Engels, J. T	Rich Hill
Fleming Coal Co	Rich Hill
Grooms, C. P	Amsterdam
Harris, J. A	Worland
Henley, R. J	Sprague
Henderson Bros	Appleton City
Hines, E. T	Foster
Holland Coal Co	Rich Hill
Houghton, C. E	Rich Hill
Hughes Coal Co	Foster
Jones Coal Co	Rich Hill
Johnson, King	Hume
McClenden, Harry	Rockville
McCullough, Williams & Stover	Foster
McComb Estate	Rich Hill
Pearson Bros	Rich Hill
Peeler, D. D	Rockville
Ritchie, H. C	Rich Hill
Roberts, J	Foster
Scott, Thos	Foster
Shelton & Metzler	Foster
Shelton & Williams	Foster
Smalley, J. M	Amsterdam
Standard Coal Co	Foster
Sprague Coal Co	Sprague
Treasurer & Littlefield	Foster
Tatley, J. V	Worland
Tarver, E. R	Rich Hill

BOONE COUNTY.

Name of Company.	*Postoffice Address.*
Davis & Waston Coal Co	Columbia
Gray, J. T	Columbia
McGee & Davis Bros	Brown Station
Prather, W. R	Columbia
Shock, R. L	Columbia
Sutton, W. C	Columbia
White, M. R	Clark
White, J. H	Clark

CALDWELL COUNTY.

Name of Company.	*Postoffice Address.*
Caldwell Coal Co	Hamilton

CALLAWAY COUNTY.

Name of Company.	*Postoffice Address.*
Eli Bell	Fulton
Diehl, Henry	Fulton
Fulton Coal Co	Fulton
Harris, Fred	Fulton
Morsinkoff, John A	Fulton
McCown, Robt	Stephens Store
Nicholson, C. M	Stephens Store
Reed, J. F	Fulton
Skelley, E	Stephens Store
Smith, David	Fulton
Simmons, J. W	Fulton

CARROLL COUNTY.

Name of Company.	*Postoffice Address.*
Brown, Chas. & Co	Wakenda
Cowan, R. M	Hale
Keynon, J. A	Bosworth
Odell, Jas	Hale

CASS COUNTY.

Name of Company.	*Postoffice Address.*
Cherokee Coal & M. Co	Creighton

CEDAR COUNTY.

Name of Company.	*Postoffice Address.*
Taylor, R. J	Milford

CHARITON COUNTY.

Name of Company.	*Postoffice Address.*
Frazier, S. W. & Son	Sumner
Kahler, W. J	Mendon
Rothville Coal & M. Co	Rothville
Strickland, J. C	Rothville
Wampler Coal Co	Brookfield

CLAY COUNTY.

Name of Company.	*Postoffice Address.*
Missouri City Coal Co	Missouri City

COLE COUNTY.

Name of Company.	*Postoffice Address.*
Bandelier, S. & A	Jefferson City

DADE COUNTY.

Name of Company.	*Postoffice Address.*
Davis Bros	Sylvania
Duncan, C. C	Milford
Hickman, O	Sylvania
McCluey, L. V	Lockwood
Sporman, Edw	Lockwood
Stout, W. A	Sylvania

GRUNDY COUNTY.

Name of Company.	*Postoffice Address.*
Trenton M. Co	Trenton

HENRY COUNTY.

Name of Company.	*Postoffice Address.*
Anaconda Coal Co	Deepwater
Barnhart, E. A	Clinton
Bowen Coal Co	Windsor
Brush Coal Co	Deepwater
Dickey Clay Mfg. Co	Kansas City
England, Jas	Deepwater
Hughes, W. E	Windsor
Hurst, Jno. Coal Co	Deepwater
Lane, E. M	Clinton
Lewis Coal Co	Lewis Station
Parks, A. F	Calhoun
Pharris, Thos	Clinton
Rusk, Wm	Deepwater

HOWARD COUNTY.

Name of Company.	*Postoffice Address.*
Collins, Wm	Fayette
Fisher, John D	Fayette
Gilvin, Jas	Harrisburg

HOWARD COUNTY—Continued.

Name of Company.	*Postoffice Address.*
Jackson, R. S. (Rohr, O. B.)	Fayette
Pitney, Alex	Higbee
Pitney, O. S	Higbee
Russell Coal & M. Co	Higbee

JOHNSON COUNTY.

American Fuel Dev. Co	Chilhowee
Burns, M. F	Knobnoster
Bullock, P. H	Montserrat
Bullock, D. A	Warrensburg
Greathouse, T. L	Osceola
Hammond, W. H	Warrensburg
Jacobs, W. D	Warrensburg
Meily, M. B	Warrensburg
Miller, Frank	Warrensburg
McGrath, John	Knobnoster
Sutherland, Coal Co	Sutherland
Werling, M	Warrensburg

LAFAYETTE COUNTY.

Aull, Edw. Coal Co	Lexington
Bell & Greer	Lexington
Blacker, Wm	Higginsville
Boedeker Coal Co	Higginsville
Bonanza Coal Co	Higginsville
Canterbury & Griffith	Higginsville
Clay, Tom	Higginsville
Corder Coal Co	Corder
Diamond Coal Co	Corder
Dover Coal Co	Lexington
Duncan, Chas	Higginsville
Duncan, Harvey	Lexington
Fallman, Ed	Wellington
Farmers Coal Co	Higginsville
Gann & Bledsoe	Odessa
Hohenwald Bros	Corder
Independence Coal Co	Independence
Kratz & Son	Higginsville
Labor Exchange No. 305	Wellington
Lanning-Harris Coal & Grain Co	Kansas City
Looney Mine	Higginsville
Martin, Jacob	Concordia
McGrew Coal Co	Lexington
Perry Bros	Higginsville
Plattenburg Coal Co	Lexington
Pointer, C. S	Mayview
Rust, W. C	Concordia
Sipe, C. C	Lexington
Stolen, Antone	Corder
Stoll Bros	Higginsville
Summers, M. W	Alma
Tyler, J. W	Aullville
Van Gilder, E. M	Kansas City
Waverly Coal Co	Waverly
Waverly Brick & Coal Co	Waverly
Western Coal & M. Co	St. Louis
Wright, J. J	Higginsville
Wright, Samuel	Lexington

LEWIS COUNTY.

Monticello Coal & M. Co	Monticello

LINN COUNTY.

Name of Company.	*Postoffice Address.*
Barr, Chas	Brookfield
Bucklin Coal & M. Co	Bucklin
Landreth Coal Co	Marceline
Marceline Coal & M. Co	Marceline
Sheehan, J. E	Brookfield
Wine, H. F	Brookfield

LIVINGSTON COUNTY.

Cox, J. O	Chillicothe

MACON COUNTY.

Central Coal & Coke Co	Kansas City
Dennis, J. H	Macon
Gates, J. N	Callao
Gronoway, D	Macon
Helmet M. Co	Kansas City
Hurd & Hurd	Macon
Isaacson & Underwood	Callao
James Bros	Bevier
Jones, Jno. H	Bevier
Lunsford, H. & A. G	Macon
Northwestern Coal & M. Co	Bevier
Smith & Hall	Macon
Vestal & Wyatt	Bevier

MONROE COUNTY.

Gilbert, J. B	Paris

MONTGOMERY COUNTY.

Noll, Buford	Wellsville
Whitehead, H .& Son	Wellsville

MORGAN COUNTY.

Ouachita Coal & Clay Co	Versailles

PLATTE COUNTY.

Home Riverside Coal Co.	Leavenworth, Kans.

PUTNAM COUNTY.

Baugher, A. W	Mendota
Blackbird Block Coal Co	Unionville
Humphrey, Richard	Liberty
Jones, Geo	Coatsville
Means, J. R	Unionville
Moore Coal Co	Unionville
Mendota Coal Co	Mendota
Medlin Coal Co., No. 7	Mendota
Mo. M. Mfg. & Merc. Co	Unionville
Robbins, J. A	Livonia
Rogers Coal Co	Mendota
Seavey, J. E	Unionville
Stevens, A	Livonia
Shelton, Elmer	Unionville

RALLS COUNTY.

Barger, John	Perry
Clark Coal Co	Perry
Jackson, Chas	Perry
Peer, H. M	Perry
Ralls County Coal Co	Perry
Smith, Henry	Perry
Tighe Coal Co	Perry

RANDOPLH COUNTY.

Bowder, John	Cairo
Butler, C. W	Jacksonville
Clark, D. E	Huntsville

RANDOLPH COUNTY—Continued.

Name of Company.	*Postoffice Address.*
Eravi, Jas.	Moberly
Giffin, Chas	Huntsville
Hardy, W	Clifton Hill
McCronan, J. M	Moberly
McKiernan, W. H	Moberly
McCune, J. H	Huntsville
Milburn Bros	Clifton Hill
Morris, Geo	Moberly
Orris Coal Co	Renick
Pilkington, John	Moberly
Sneed & Snow	Jacksonville

RAY COUNTY.

Name of Company.	*Postoffice Address*
Anderson, C. C	Richmond
Bisbee, Wm	Richmond
Blair, Hugh	Polo
Blair Coal Co	Richmond
Brockman, G. C. & A. B.	Camden
Calnen & Blair C. Co	Richmond
Central Coal & Coke Co	Kansas City
Clark, Jacob	Hardin
Collier, J. W	Hardin
Crawford & Wilson Coal Co	Richmond
Crispin & Ward	Richmond
Daugherty, C. M	Norborne
Doran, Jno	Hardin
Fowler Coal & M. Co	Richmond
Gant, J. M	Norborne
Good & Turner	Orrick
Heisinger, Henry	Norborne
Huston, Fred	Hardin
Hughes, A	Richmond
Martin-Hubbell-Osborn Coal Co.	Kansas City
Hymer, O. P	Richmond
Johnson, L. E	Hardin
Loeven, M. J	Hardin
Loeven, Theo. J	Hardin
Love, James	Norborne
Maple, Hill Coal Co	Richmond
McCorkendale, J. J	Hardin
McDaniel, J. L	Richmond
Mercantile Coal & M. Co	St. Joseph
Ottman & Nelson	Richmond
Pence & Co	Richmond
Pence & Calnen	Richmond
Pickering Coal Co	Richmond
Ray County Coal Co	Richmond
Richmond & Camden Coal Co	Richmond
Rice, Perry	Richmond
Shea, Thos	Richmond
Schooler & Bates	Vibbard
Thompson, G. W	Richmond
Watson, J. N	Richmond
Whitmer Coal M. Co	Richmond
Woodruff, Jno	Norborne

SALINE COUNTY.

Garver, J. N	Sweet Springs

SCHUYLER COUNTY.

Blansett, B. F	Coatsville
Golston, Ira	Queen City
Hymes, J. W	Coatsville
Long, G. B	Coatsville
Grindle & Mock	Coatsville

ST. CLAIR COUNTY.

Cook, Jas. M	Appleton City
Griggs, L. L	Lowry City
Hunt, Chas	Rockville
Wooden, H. N	Rockville

VERNON COUNTY.

Brown, A. S	Moundville
Central Coal & Coke Co	Kansas City
Ewing, W. H	Walker
Flake, J. W	Schell City
Hill, W. L	Moundville
Koch, Herman	Walker

FIRE CLAY MINES.

Name of Company.	*Postoffice Address.*
Atlas-Portland Cement Co	Hannibal
Blackmer & Post Pipe Co	St. Louis
Ellwanger, Thos. T	St. Louis
Evans & Howard	St. Louis
Fulton Fire Brick Co	Fulton
Goetz Bros. Fire Clay Co	St. Louis
Grand View Fire Clay Mines	St. Louis
Gulken, Theo	St. Louis
Highland Fire Clay Co	St. Louis
Hydraulic Pressed Brick Co	St. Louis
Krummel & Buckner F. C. Co	St. Louis
Mitchell Clay Mfg. Co	St. Louis
Parker-Russell M. & M. Co	St. Louis
Roberts, H. and Son	St. Louis
St. Louis V. & F. Brick Co	St. Louis
Versailles F. B. & Clay Mfg. Co	Versailles

V

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TWENTY-THIRD ANNUAL REPORT

OF THE

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Mine Inspection

OF THE

STATE OF MISSOURI

For the Year Ending December 31

1909

TWENTY-THIRD ANNUAL REPORT

OF THE

BUREAU OF MINES, MINING AND MINE INSPECTION

OF THE

STATE OF MISSOURI

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1909

THE HUGH STEPHENS PRINTING COMPANY
JEFFERSON CITY, MO.

PERSONNEL

OF THE

Bureau of Mines, Mining and Mine Inspection

1909.

COAL MINE INSPECTORS.

Robert Richards	Bevier	Appointed	April 15, 1909.
Michael Gavin	Lexington	"	February 15, 1909.

LEAD AND ZINC MINE INSPECTORS.

Chas. P. Wallace	Carterville	Appointed	February 15, 1909.
W. S. Brown	Joplin	"	July 1, 1909.
I. J. Pirtle	Fredericktown	"	February 15, 1909.

Geo. Bartholomaeus, Secretary, Jefferson City.

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LETTER OF TRANSMITTAL.

Hon. Herbert S. Hadley, Governor of Missouri:

Sir—As provided for in section 8465, R. S. 1909, relating to mines and mining, I have the honor of submitting to you the Twenty-third Annual Report of this Department.

Very truly yours,
GEO. BARTHOLOMAEUS,
Secretary.

I. J. PIRTLE,
CHAS. P. WALLACE,
W. S. BROWN,
Inspectors Lead and Zinc Mines.

ROBERT RICHARDS,
MICHAEL GAVIN,
Inspectors Coal Mines.

TWENTY-THIRD ANNUAL REPORT

The mining industry in Missouri, while showing no phenomenal or unprecedented features during 1909, was on the whole more prosperous than in the preceding year.

Reports to this Department show an increased production in zinc, lead and coal, and particularly noteworthy are the large increases in the production of lead and zinc. Missouri has been making uninterrupted gains in the production of lead for many years, and the State now holds, without question, first place among the lead producing states of the Union.

The total value of all mineral products mined during 1909, and reported to this Department, reached the sum of $26,933,529, an increase of $5,702,075, the highest point in valuation yet attained.

The laws relating to mines and mining were complied with by operator and miner in marked degree, and the reports of the inspectors show the mines of the State to be in safe and sanitary condition, as far as it is possible to maintain them. The inspectors, of necessity, gave special attention to the larger mines of the State by frequent and careful inspections, and the reports of inspections will show that the small mines were not overlooked. The recommendations made by the inspectors and complied with by the operators have added no little to the betterment of conditions in the mines of the State generally.

It is indeed gratifying that Missouri was spared any great mine disaster during 1909, such as befell our sister state, Illinois, in the ill-fated mine at Cherry. It is, furthermore, a source of satisfaction to note that the number of fatalities in our mines has been greatly reduced; but the number of accidents is still too large, as many of the accidents reported are classed as avoidable, and due to negligence.

Our records show a decrease of 46, or 31.29 per cent., in the number of fatal and non-fatal accidents occurring in all mines of the State during 1909. Only a small number of coal mines in this

State are gaseous, and Missouri has almost a clean record on mine explosions.

The great disaster occurring in the St. Paul mine, at Cherry, Illinois, impressed the necessity of exercising the greatest care in the inspection of mines, and to provide the greatest possible safety for those who are compelled to work in underground mines. Following a suggestion made by Governor Hadley, the mine inspectors of this State now serve written notice on operators of mines for the correction of defects and irregularities. The operator is required to notify the Department that the defect complained of has been corrected. The notices given by the inspectors are in triplicate form—the original going to the operator, the duplicate enclosed with the report of inspection and mailed to the Secretary of the State Mining Departmnet, and the third copy being retained by the inspector for reference. The blanks are also provided with detachable form-blanks, upon which the operator makes his return to the Department. This system has had the effect of securing prompt action in the correction of defects pointed out by the inspectors, and has no doubt been the means of avoiding accidents resulting from delay or neglect in the correction of dangerous conditions. Besides being a great aid in fixing responsibility for mine accidents, the Department now has a complete record of all inspection work done by the inspectors.

One of the great needs of the State Mining Department is a comprehensive law regulating metalliferous mining. Most of the laws now upon the statute books refer only to coal mines, and the inspectors in the lead and zinc districts are frequently powerless to enforce necessary corrections in mines because of either no law, or the insufficiency of the law. This matter is referred to and discussed at length in Mr. Wallace's paper printed in this report elsewhere. The need of such a law having been felt in other states, a committee was appointed by the American Mining Congress, in session in Denver, Colorado, in November, 1906, to draft a law for the regulation of quarrying and metalliferous mining, under the police laws of the states, with the hope that the uniform adoption of such a law would tend to reduce the number of accidents in mining. The labors of this committee have been completed, and this department is now in possession of a copy of the draft, omitted from this report because of length and expense in reprinting same. The committee, in its report, says: "In the preparation of this draft, the committee has had in mind the preparation of a law that will be effective, and not merely a code of rules and regulations of which the enforcement will be largely optional. The committee has aimed to fix responsibility upon operator, superintendent, foreman and miner respectively, and failure on their part to comply with the terms of the law is to be punishable by suitable penalties. The enforcement of the law is charged primarily upon the inspector of mines, who is to be, to all intents and purposes, a policeman."

LEAD AND ZINC.

The Southwest district, comprising, in the main, Greene, Lawrence, Newton and Jasper counties, shows a remarkable increase in the production of zinc ore during 1909, and the valuation of the ore mined is more than two million dollars over that of 1908. This large increase is the more surprising when considered in light of the fact that the first five months of the year added but little to the big output, because the controversy for and against a tariff on zinc had the effect of an unsettled condition in the metal market, keeping the price, as well as the production, down. The producers of ore, who favored a tariff on zinc ore, finally won, and under the Payne-Aldrich bill, zinc ore is now subject to a graduated schedule rising to one cent per pound on the zinc contents of ore, assaying thirty per cent. zinc. Unquestionably the duty on zinc had much to do with the advance in price and the general revival of activity in the zinc fields. It has again been demonstrated that the production of zinc in the Joplin district is controlled by market conditions; that the supply is equal to the demand, when the price of ore is at a figure that will pay to mine it. During the panic of 1907 and 1908, when the price of zinc ore reached the lowest figure in years, the production not only decreased, but fell far below the possibilities of the district, because capital withdrew from a losing proposition, thus compelling the closing of the mines.

All over the district idle mines and mills furnished unmistakable proof of this. With the recovery of a $40 base, operations were resumed, and an increased output is the result for the year 1909.

In the table following a comparison of the average monthly price of 60 per cent. zinc ore at Joplin, during the years 1908 and 1909 is given. The low prices during the first five months of 1909 show the effect of the tariff controversy:

Year.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Yr.
1908............	37.60	36.63	36.19	35.40	34.19	34.06	34.55	36.53	37.63	35.95	39.13	42.75	36.63
1909............	38.48	34.46	34.77	35.99	37.82	40.00	41.28	44.56	44.78	46.04	48.29	47.97	41.14

Those familiar with conditions in the Joplin district say that a still larger increase may be looked for whenever the price of ore warrants its being mined and concentrated. Activity in the mines is now confined to the richer ore bodies, which can be most profitably worked, at the prevailing price of ore. This is true with reference to both the old mining camps and the newly developed territory. In southwest Missouri, where lead is recovered as a by-product in the working of zinc ore, the lead product for the year 1909 shows a slight decrease.

The principal lead deposits are in southeast Missouri, where an increased production is also shown for the year 1909. The lead belt of southeast Missouri extends over Franklin, Jefferson, Washington, St. Francois and Madison counties. The bulk of the production from the southeast section comes, however, from the deep disseminated deposits of St. Francois county, which county produces 95 per cent. of the output of the district.

The five big mining companies operating in St. Francois county show a total of 202,473 tons of lead produced in 1909, valued at $8,442,962, an increase in production of 72,490 tons, and in value of $2,235,317. The total lead product of southeast Missouri in 1909 was 213,389 tons, valued at $8,913,004, an increase in tonnage of 68,436 tons, and an increased valuation over 1908 of $2,265,761. The counties contributing to the lead output of Missouri during 1909 were Franklin, Jasper, Madison, St. Francois, Washington and Jefferson.

COAL.

A compilation of statistics on the coal production of Missouri for the year 1909, made from the reports of operators in the coal producing counties of the State, shows an increase of 450,194 tons over the year 1908. While this is a considerable increase, it is still far behind the big production of 1907, and shows that the State has not fully recovered from the financial depression which so greatly affected the coal industry of this State during the panic. The output of the coal mines of the State during 1909 was 3,850,748 tons, valued at the mines at $6,319,586. This tonnage was produced in thirty-five counties, having 315 mines in operation, and employing 9,097 persons, of whom 8,295 worked underground, and 802 worked above ground. In the production of coal, Macon county, which for a number of years ranked first, still retains this position, but shows a decrease of 34,824 tons for 1909. Lafayette county, the second largest coal producing county in the State, reports an increase of 152,202 tons, and Adair county, which in 1908 was practically on a par with Lafayette county in production, shows a loss of 4,118 tons. Other counties showing substantial gains in production are Barton, Henry, Linn, Platte and Randolph. Mining machines were in use in Lafayette, Adair, Ray, Henry, Bates, Randolph and Audrain counties, and the total amount of coal mined by machines was 841,692 tons, or 21.9 per cent. of the total product. The total number of tons mined by pickwork was 3,009,056, or 78.1 per cent. of the total output of the mines.

The average price received at the mines for coal shipped by rail and not sold to local consumers was $1.70 per ton, an increase of four cents over the average selling price of 1908.

IRON.

The iron ore industry of the State during 1909 was, in so far as production is concerned, not so flourishing as during 1908. Our reports show a reduction in tonnage mined and several counties, formerly big producers show no output during 1909. This decrease in production can only be attributed to market conditions and the lack of capital and shipping facilities. The iron ore industry in Missouri is yet in its infancy, and recent development work in several counties, particularly Wayne and St. Francois, gives hope of a big increase in the production of iron in the near future. Missouri is rich in its iron ore deposits, and with increased shipping facilities, and capital to develop the work in the iron district, it is safe to predict that Missouri iron mines will become a factor in the iron trade of the country, and in production will rank with the big producing states of the Union.

CLAY.

Our reports on the clay production during 1909 came from four counties, Audrain, Morgan, St. Louis and Warren, and the tonnage reported mined is 477,060, value $371,898. The principal production came from St. Louis county, where fourteen companies are engaged in this industry.

MINE ACCIDENTS.

While the State was spared of mine disasters costing great loss of life in single instances, the aggregate number of deaths caused in small accidents is far too large. No matter how well regulated the mines are, or how strictly the laws are enforced, mining will always be a hazardous occupation, and one not entirely free from accidents. But it is a source of deep regret that so many fatalities in our mines are chargeable to negligence and carelessness. Among the avoidable accidents, we find that the reckless use of explosives, the improper trimming of roof and falls from roof are largely responsible, and a large per cent. of the deaths reported are traceable to these causes. It is a fact that too many mines are operated with an eye single to a big output; mines where rules and regulations for the protection of life in the prosecution of the work are conspicuous by absence or non-enforcement, and where the miner is neither warned nor prohibited from taking the limit of risk in plying his vocation. It would be unfair to say that such operators have no regard for the life and safety of employes, but they are certainly unmindful of the responsibility resting upon them in not establishing the strictest supervision and in not providing the greatest possible means of safety.

The horrors of the Cherry mine disaster, in November of 1909, are still fresh in the minds of everyone, and whatever the primary cause that led to it may be, one thing was established beyond doubt, that the accident was due to carelessness, coupled with insufficient means of escape. Considering the utter disregard for law and proper protection of life, so common in mines everywhere, the wonder is that similar disasters are not more frequent. Little or no attention is paid to the accidents occuring daily, which claim the lives of one or two men, and yet the aggregate number of lives sacrificed in these small accidents far exceeds the total loss of life in the St. Paul mine. The states cannot shirk responsibility, and the things most essential are adequate inspection to insure the enforcement of the law, liberal appropriations by Legislatures to make this possible, and the enactment of an equitable liability and compensation law that will protect the laborer and those depending upon him.

The appalling loss of life at Cherry, Illinois, while eliciting general sympathy for the unfortunates, had a deeper interest for one of the Missouri mine inspectors, Mr. Robert Richards, of Bevier, whose near kinsman was one of the victims of that awful disaster. Mr. Richards was early on the scene at Cherry, and joined the rescue party. Under date of November 18th, he wrote to the Department:

"I arrived at Cherry on Tuesday morning, November 16th, and at once offered my services in the work of rescue, or in whatever place I could be of assistance. My offer was accepted, and I took part in all of the preliminary work, as well as in the actual work of the rescue. Those in charge of the work were the state mine inspectors of Illinois, assisted by inspectors from adjoining states and officials of the coal mining company. My participation in this work of rescue has been a school of instruction to me, which will prove beneficial and valuable should a like catastrophe occur in our own State while in the position of mine inspector.

"On my arrival at Cherry I found the air shaft and main shaft of the ill-fated mine sealed for the purpose of smothering the fire below. The temperature of the main shaft was so high as to make a venture to descend into the mine perilous. On Wednesday, mine experts, inspectors, mining board and mine officials met in secret session to devise a plan to enter the mine. The meeting lasted until Wednesday night, when a plan was proposed to enter the air shaft by the use of oxygen helmets. The heat had by this time sufficiently subsided to make entry possible. On Thursday evening the main shaft was entered by the aid of safety lamps, with the assistance of fire fighters. The firemen worked heroically, and to them no small share of the honor is due in making an entry into the mine possible, and thus paving the way for the experts to reach the entombed miners. You will notice that the first entry was effected by the use of safety lamps. Our department should have a supply of these lamps, as I understand there are only a few of these lamps in the entire state. Another matter of importance, which should be given more attention in our work, is the inspection of underground stables. Some of the Illinois inspectors have taken instruction in the use of the oxygen helmet, and I believe it would be a good plan if the inspectors of our department would visit the government rescue station, and gain knowledge in the use of the helmet."

In our own State, during the year 1909, the number of accidents in all mines (coal, lead and zinc) reported from known causes, was 126. Of this number 40 were fatal and 86 were non-fatal. Of the fatal accidents reported, 53, or 61.63 per cent. occurred in the western lead and zinc district; twelve, or 13.95 per cent. in the eastern lead and zinc district, and 21, or 24.42 per cent., in the coal mines of the State.

Out of the total of 44 accidents occurring in the coal mines during 1909, the greatest number were due to falls of roof or coal, 31, or 70.45 per cent., being the direct result of this cause, 14 of which resulted fatally.

For each fatal accident in the coal mines of the State during 1909, there were 183,373 tons of coal produced.

In the following table the number of accidents occuring in 1909 are compared with the number of accidents reported in 1908:

	Fatal.		Non-fatal.		Total.	
	1908	1909	1908	1909	1908	1909
Lead and zinc mines, eastern district....	13	12	2	4	15	16
Lead and zinc mines, western district....	33	53	52	13	85	66
Coal mines of the State...............	10	21	37	23	47	44
Total number of accidents.........	56	86	91	40	147	126

The various causes of fatal and non-fatal accidents occurring in all mines of the State are given in the following table:

	Fatal.	Non-fatal.	Total.
Breaking of electric hoist		1	1
Breaking of line shaft	1	1	2
Caught by shot	1	1	2
Caving ground	3		3
Caught between two tubs	1		1
Explosion of shot	5	2	7
Explosion of powder	5	2	7
Explosion of boiler	2		2
Explosion of gas engine	1		1
Fall of coal	5	2	7
Fall of rock	15	10	25
Fall of roof	2	4	6
Fall of slab	19		19
Fall of boulder	5	1	6
Fall of slate		5	5
Fall of timber	1	3	4
Fall from cage	4		4
Fall of back	3		3
Fall into shaft	3	1	4
Fall into sump	1		1
Fall of cage		1	1
Injured by trip of cars		1	1
Premature explosion	2	3	5
Returned on shot	2	1	3
Struck by man falling		1	1
Struck by cage	3		3
Suffocation by powder smoke	1		1
Crushed between car and timber	1		1
Totals	86	40	126

The table below shows the number of accidents in each of the coal producing counties, and the percentage of the total number of accidents in coal mines:

County.	Fatal.	Non-fatal.	Total.	Percent.
Adair	2	2	4	9.09
Audrain	1	....	1	2.27
Bates	1	....	1	2.27
Clay	....	1	1	2.27
Callaway	1	....	1	2.28
Henry	3	....	3	6.82
Lafayette	1	5	6	13.63
Linn	....	3	3	6.82
Macon	9	11	20	45.45
Randolph	2	1	3	6.82
Vernon	1	....	1	2.28
Totals	21	23	44	100.00

MINERAL PRODUCTION OF MISSOURI FOR THE YEAR 1909—BY COUNTIES.

	Zinc.		Lead.		Coal.		Clay.		Iron.		Barytes.		Copper.	Cobalt.	Nickel.	Total value all minerals
	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.	Value.	Value.	Value.	
Adair					564,328	$857,629										$857,629
Audrain					33,336	62,339	20,000	$17,500								79,839
Barton					217,001	296,342										296,342
Bates					117,674	192,565										192,565
Boone					19,726	39,188										39,188
Butler									3,500	$6,560						6,560
Caldwell					7,815	19,537										19,537
Callaway					32,491	66,298										66,298
Carroll					1,210	3,025										3,025
Cass					7,500	15,000										15,000
Chariton					1,007	2,697										2,697
Clay					44,500	80,660										80,660
Cole					2,466	4,932										4,932
Dade					5,592	9,786										9,786
Franklin			20	$800					225	562						1,362
Greene	772	$40,393	280	9,818												50,211
Grundy					9,869	30,624										30,624
Henry					279,754	459,712										459,712
Howard					611	1,288										1,288
Jasper	202.195	8,232,825	34,540	1,727,569												9,960,394
Jefferson	1,284	21,186	104	8,594												29,780
Johnson					6,556	13,983										13,983
Lafayette					724,110	1,316,991										1,316,991
Lawrence	11,162	382,144	278	14,562												396,706
Linn					132,810	286,061										286,061
Livingston					735	1,700										1,700
Macon					816,306	1,154,261										1,154,261
Madison			10,569	454,339									$145,000	$75,000	$35,000	709,339
Moniteau					1,792	4,695										4,695
Monroe					450	1,125										1,125
Montgomery					2,828	6,665										6,665
Morgan					1,680	4,200	20,100	13,025								17,225
Newton	11,976	420,864	2,552	139,849												560,713
Platte					204,098	424,799										424,799
Putnam					51,770	85,219										85,219
Ralls					15,237	27,550										27,550
Randolph					205,909	231,362										231,362
Ray					301,383	552,910										552,910
St. Francois			202,473	8,442,962					15,000	45,000						8,487,962
St. Clair					1,360	2,860										2,860
St. Louis							438,042	340,516								340,516
Saline					100	250										250
Schuyler					2,200	4,083										4,083

MINERAL PRODUCTION OF MISSOURI FOR THE YEAR 1909—BY COUNTIES.—Continued.

	Zinc.		Lead.		Coal.		Clay.		Iron.		Barytes.		Copper.	Cobalt.	Nickel.	Total value all minerals
	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.	Value.	Value.	Value.	
Stoddard									756	$2,268						$2,268
Sullivan					4,972	$10,000										10,000
Vernon					31,472	49,250										49,250
Warren							918	$857								857
Washington			223	$6,309							3,957	$14,251				20,560
Wayne									7,814	16,190						16,190
Totals	227,389	$9,097,412	251,039	$10,804,802	3,850,748	$6,319,586	479,060	$371,898	27,295	$70,580	3,957	$14,251	$145,000	$75,000	$35,000	$26,933,529

COAL MINE ACCIDENTS AND THEIR PREVENTION.*

By J. A. Holmes.

On my way east to this meeting from the ill-fated Cherry mine in Illinois, I was talking on the train with two gentlement brought up under different conditions of life, with reference to this matter of lessening mine accidents. One of them said: "It is of no use to try, the miners are too careless." The other said: "It is of no use to try, the operators are indifferent."

Neither of these judgments is correct, just, or helpful.

The purpose of this address is to point out in the briefest possible manner the salient features of the coal mining industry, to call attention to the fact that the present economic basis of this industry is fundamentally bad, and to suggest possible remedies for this bad situation.

If we are going to attempt seriously to reduce the loss of life and the waste of resources in this greatest of our mining industries, we must carry on investigations and inquiries to determine the causes and to devise preventive measures; we must promptly and adequately inform the miners and active mine officials of the results of such investigations and inquiries; we must revise our laws and regulations in accordance with the best information thus obtained; and we must look to a proper enforcement by the States of such laws and regulations. We must also go to the tap-root of the evil—that is, we must improve the economic conditions on which this great industry is based.

We must seek the needed improvement—not simply through one or two of these remedial measures, but through each and every one of them.

Our coal industry in its phenomenal growth has nearly doubled during each succeeding decade of the past 80 years. It has had to do more than keep pace with our increasing population, for, while it supplied less than one ton of coal per capita to the American people in 1870, it has had to supply nearly six tons per capita during 1907. Its growth has been too rapid for systematic development; and the industry today represents a great host of scattered, warring, discouraged elements, without organization or co-operation.

In this industry are now employed 700,000 miners, who work at some 6,000 different mines and produce yearly about 500,000,000 tons of coal. Not only is the nation increasingly dependent upon this coal for its heat and light and for power for its manufacturing industries and transportation facilities, but this coal and other mineral products now contribute more than 65 per cent. of the total freight tonnage of the country.

The economic conditions upon which coal mining is based in this country are so fundamentally bad, and the evil consequences are so far-reaching as to both time and extent and are so essentially national in character, that this subject demands the earnest consideration of our best statesmen, as well as of our best engineers.

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*Address delivered, with the approval of the Director of the U. S. Geological Survey, at the Tenth Annual Meeting of the National Civic Federation, New York, November 23, 1909.

There can be no permanent industry without reasonable profits. It is unjust and irrational that in this great and essential branch of industry reasonable profits or even the payment of operating expenses should be dependent upon methods involving unnecessary sacrifice of human life and unnecessary waste of resources which we can neither replace nor restore and which will be essential to the larger future development of the country.

The following observations will serve to make this situation clearer:

1. In spite of this rapid growth in our demand for coal, the normal productive capacity of our coal mines if operated continuously would greatly exceed this demand.

2. Ruinous competition exists not only between the operators in the same field, but between the operators of one field as against those in another field or in another state where different mining laws and regulations are in force.

3. This competition is, first of all, driving out of the business the small operators, except where they find protection under local freight rates, and is forcing even the larger operator to mine coal under conditions which he cannot approve but from which he finds no escape. If he and his fellow operators endeavor to "get together" and place the price of coal at the mine on a reasonable basis they go to jail under either a Federal or a State statute; and, as the only alternative, each must live (or succumb) by underbidding the other, which he can do only through following the wasteful and unsafe mining methods which prevail in this country today in spite of the desire of every operator to improve them.

4. Even when the demand for coal and the prices are at their best, under existing conditions the operator can mine only that part of his coal which can be taken out most cheaply and sold at the higher prices; and the remainder must be left underground in such shape as may preclude its future recovery. And thus we waste yearly approximately 250,000,000 tons of the nation's fuel supply.

5. The American mine owner is as humane as the mine owner of any other country, and he would like to follow every practice and use every appliance for safety to be found in Great Britain, or France, or Belgium, or Germany, or elsewhere, but he pays his miners higher wages and, at the same time, receives for his coal at the mine half the price received for similar coal by the operator in those countries; and he must employ miners an increasingly large percentage of whom come to him unfamiliar with either the practices of the industry or the language and traditions of the country.

6. The penalty which the nation is paying for this bad system is this increasing waste of essential resources and the still more unpardonable increasing waste of human life—the yearly loss of 250,000,000 tons of coal and the killing or injuring yearly of 8,000 to 10,000 men.

The fact cannot be too clearly emphasized that it is the nation that pays this penalty; and that its increasing evil results will lessen the nation's future development.

The remedies for this bad situation are:

(a) Investigations and inquiries, such as are now being conducted by the Government, as to the causes of mine explosions and other similar investigations as to the causes of mine accidents of other kinds and as to the methods of prevention.

(b) The dissemination of information among the miners and the active mine officials as to these causes and remedies.

(c) The training of men at each mine as to the best methods of using explosives, using electricity, handling gases and dust, and timbering, preventing and extinguishing mine fires, as well as the methods of rescue work and of first aid to the injured.

(d) The development of better, more uniform, and enforceable State mining laws, rules and regulations, based upon accurate data and experience.

(e) Active, determined co-operation between the miners and the mine management and the State's inspectors in the enforcement of these rules and regulations, with a view to the maintenance of the safest possible conditions in every mine. This means strict and rational discipline in and about every mine among miners and mine officials.

(f) State mine inspectors should have better support in the way of compensation and allowance for travel expenses, greater permanence in office, and freedom from political and other outside influences; and wherever possible their efforts should be supplemented by the employment of special private inspectors by each mining company.

The above are all parts of the program for lessening and alleviating mine accidents, but they do not complete the program. It is an essential part of this program that:

(g) The ruinous competitive systems upon which coal mining in the United States is based at the present time should be changed and that the price paid for coal at the mines should be such as will permit and secure safe and efficient mining—mining unaccompanied by either this large loss of life or waste of resources, mining which can have due regard not only to the safety but also to the health and comfort of the men who toil underground and whose labor is so essential to the welfare of the nation. All this can be done without adding appreciably to the burden of the average American citizen, without any increase in the price of coal at the poor man's cottage, and without the risk of any unreasonable restraint of trade.

An increase of ten or twenty cents per ton in the price of coal at the mine would greatly increase the possibilities for safety and clean mining and would not necessarily mean any increase in the cost of power to the consumer, who in many cases could save more than that much per ton by adopting more efficient methods in the use of this fuel. Nor is it believed that large consumers of coal would object to this reasonable increase in price, in behalf of safety, clean mining, and reasonable operating profits, if assured that their competitors would have to pay the same and that the price would be reasonably stable.

The injustice of the situation is apparent when it is seen that of the $3.00 or $6.00 per ton paid for coal at the point of consumption only $1.00 goes back to the mine to be divided between the miner, the operator, and the land owner, to cover investments in mine equipment and development, all the labor and costs and dangers of mining operations, and the loading of the coal on the cars ready for shipment.

It is for the law-makers to devise a plan that will permit this needed co-operation among the mine operators in behalf of greater safety for the miner, less waste of resources, and reasonable profit on investments, and that will also protect the public against the possible abuse of this privilege.

The coal industry needs and deserves fair treatment at the hands of the American people, and upon its receipt of such treatment depends in large measure not only the welfare of the operators—though nobody cares about **them**—but also the welfare of the 700,000 miners who daily risk their lives in supplying the fuel for the nation's industry and commerce and the heat and light for the nation's comfort and convenience, and the welfare of the industry itself as an essential part of our future national development.

ACCIDENTS IN LEAD AND ZINC MINING.

Causes and Prevention.

BY CHARLES P. WALLACE.

On December 17th, 1909, Hon. Chas. P. Wallace, State mine inspector of lead and zinc mines for the western district, read a paper before the Mining Club of Joplin on accidents in lead and zinc mines.

This paper was printed in full by he Joplin papers, and the Accident and Liability Department of the Aetna Life Insurance Company of Hartford, Conn., gave Mr. Wallace's paper wide circulation in a special pamphlet. Commenting on the paper the insurance company says:

"If the precautions recommended by Mr. Wallace were taken by every mine operator, the hazards in the lead and zinc mining industry would be reduced to that point where the number of accidents would be very few in comparison with what they have been in the past. The current of Mr. Wallace's thought as expressed in his paper is: safeguard the workmen.

The paper is so replete with valuable information and suggestions that it is here printed in full for general distribution, in the hope that it may be a factor in bringing about better safety conditions in lead and zinc mining operations. Anyone interested in the subject will be well repaid for the time spent in a careful perusal of Mr. Wallace's paper."

Mr. Wallace's paper, reprinted in full, follows:

I am glad that the Mining Club has taken up this subject of "Causes and Prevention of Mine Accidents," and I am glad to have the opportunity of appearing before this meeting and expressing my ideas of what can and should be done to prevent such accidents, with the hope that some good may result.

Mining is a business in which the men employed are always exposed to dangers from accidents, and this fact is only too often brought to our notice in the most shocking and painful manner. It has been aptly said that large mining operations are about as full of pitfalls as the skeleton frame of a cky-scraper building, and to the truth of this saying I believe we can all testify.

Number of Men Killed.

That the mines of the Western District of Missouri are not an exception to this rule can be easily demonstrated by a glance at the statistics, covering mine accidents, gathered by the Bureau of Mines and Mine Inspection, which show that during the ten years from 1900 to 1909 inclusive, 329 men have been killed in them. An average of about thirty-three fatal accidents per year, or a percentage of about four men killed per 1,000 men employed.

Accidents in 1909.

During the year 1909 forty-two men have been killed and fifteen men seriously injured, in and about the mines of the Western District. This, taking into consideration the number of men employed (which is far greater than at any time in the history of the district) the greater number of mines now in operation, the many old mines which have been started up, and the greatly increased mineral output, is no worse than the average and it may be much better when the reports are in showing the total number of men employed—but it is still far too high.

Why Accidents Occur.

Now, what is the matter and where does the trouble lie? Is it that our mining practice is at fault? I think not, because that mining practice is the result of years of experience and development in this District, and the experience of other districts adapted and modified to meet local conditions and difficulies. The fault is not with the practice, but with abuses of the practice. Carelessness may also be stated as the cause of a large percentage of our mine accidents.

Development of the Mining Industry.

Great strides have been made in the last ten years in the development of the mining industry in Southwest Missouri, especially in the improvement of mining and milling practices. Our mining and milling costs in hard ground will compare favorably with those of any district in the world, but the features of safety and sanitary conditions have not kept pace with the advance along other lines. Our percentage of fatal accidents remains about the same as it was ten years ago—four per 1,000 men employed.

Co-operation of Operators and Miners Needed.

With this record to its credit—or rather discredit—it is high time for the mining interests of this district to inauguarate a general movement for the betterment of conditions in the mines as regards the health and safety of the men employed. Such a movement must originate within the body of the mining interests from a realization of the errors of the past and the pressing needs of the present, and its success depends in large measure upon the hearty co-operation of the operators and the miners. The tendency of the age is toward conservation, and the protection of our fellow-men from death and injury by avoidable accident is not only one of the highest moral duties, but also conservation in the highest sense.

Knowledge Properly Applied.

Given accurate knowledge of what it is necessary or desirable to do, the prevention of the majority of accidents in this district should be comparatively simple, provided this knowledge is properly applied. Most of our operators know how mining should be conducted in the different formations, and our miners know how to do the work, but the trouble is that they do not always act in accordance with their knowledge. We inspectors, every now and then, find an operator who is permitting conditions in and around his mine which he obviously knows to be dangerous, and we find miners knowingly committing acts which endanger not only their own lives but those of other men working with them.

Law Needed to Place Responsibility.

In many cases the law does not properly provide for such conditions and acts. Therefore, I think that one of the first steps to be taken is to secure the passage of a modern and comprehensive law, or code of laws, regulating metalliferous mining—a law that would state clearly the responsibility of the mine owner; the responsibility of the miner; the duty of the mine owner; the duty of the miner; what the mine owner shall and shall not do, and what the miner shall and shall not do. Such a law would work no hardship on the mine owner who is conducting his operations correctly and would result in the saving of life, the betterment of conditions generally for the men who work in the mines, and would locate the responsibility for many accidents.

Existing Laws not Adequate.

Most of the mining laws of this State, as they now stand, refer to coal mines only. True, we have a few good laws regulating mines other than coal, but they are not sufficient to cover existing conditions and the inspectors are greatly hampered in their work by the lack of a more complete code.

Need For More Comprehensive Laws.

That the need for such a law is general, and has been felt in other States, is instanced by the fact that at a meeting of the American Mining Congress, at Denver, Colo., in November, 1906, a committee was appointed to prepare a modern law governing quarrying and metalliferous mining, with the view to its adoption by the American Mining Congress and recommendation to the various States of the Union for its passage as a uniform law, replacing existing laws which, in the best cases, are more or less imperfect and out of date. The committee that was appointed comprises W. R. Ingalls (chairman), John Hayes Hammond, James Douglas, J. Parke Channing, and James R. Finley, who are among the foremost men in the mining world today. They bring to the task their wide experience, not only in the mines of the United States but all over the world. and that the law which they prepare will be a good one goes without saying.

The Law as a Basis.

Using this law as a basis, and making such changes and additions as may be necessary to meet the conditions obtaining in the mines of this State, we will have a law which will cover every phase of the subject and at the same time have sufficient latitude to impose no obstacles to the proper development of our mineral resources.

Getting Information.

The inspectors are now gathering data and information for this purpose and would appreciate suggestions from mine operators, miners or any one interested as to what should be included in, or excluded from, such a law, so that it would meet most fully our local requirements.

CUTTING, TRIMMING, AND SUPPORT OF GROUND.

Accidents From Falls of Roof.

During the year 1909 falls of roof, as is universally the case in mining and underground work, claimed the greatest number of victims. Over fifty per cent. of the total fatalities in this district were so caused. In my opinion, based upon my investigations of the different accidents caused by falls of roof, only about twenty-five per cent. of them could be classed as unavoidable. Of the remaining seventy-five per cent., some were caused by carelessness in not properly trimming the roof; some by carelessness in not properly timbering ground; some by carelessness on the part of men working in places known to be dangerous in order to "beat wages," but the majority by carelessness in the improper cutting of ground. I mean cutting ground so wide that it cannot possibly stand for any length of time—not leaving sufficient pillars and of the right size to properly support the roof. That is one of the greatest causes of accident in this district, and especially in our sheet ground mines.

Dangers of Sheet Ground.

With the passing of the rich bodies of disseminated ore the majority of our mines are working in the formation known as sheet ground. This formation, if properly mined, is the safest, and, if improperly mined, the most dangerous that we have. The most dangerous because when the roof does break in a drift in a sheet ground mine it generally comes down as a slab, some six inches to several feet in thickness, and covering the whole drift. Much of the trouble we inspectors are having at present is with slabs in the sheet ground mines. I know that many operators can say the same, for, even if they have had no accidents, they have been compelled to take down slab after slab of roof until the handling of so much waste has eaten up profits for months at a time, and in some cases the taking up of stope will be impossible, all because the ground was cut too wide.

Slabbing of Roof.

This slabbing of roof in sheet ground is simply the effort made by the ground to arch itself (the roof from necessity being left flat), augmented by the effects of the heavy blasting incident to this class of mining, and the only way to avoid it is to leave the pillars closer together and in proper form.

Greed of Operators.

There have been many instances of wide cutting of ground in other formations because of the greediness of the mine owner in working out a rich body of ore, but that is not often the case in sheet ground. It is easy to see how this practice became general with the working of low grade ore bodies, the erection of mills of large capacity and the consequent demand for a larger daily tonnage from the mine. The mine owner or superintendent, anxious to produce results, made the demand on the ground foreman for more "dirt," and the foreman—even while in many cases knowing better, but wishing to make good and thinking, too, perhaps, that if he did not do it some other man would—butchered the ground to get it.

No Valid Reasons For Neglect.

There are many excuses but no valid reasons for this practice. But, be that as it may, the question now before us is, how shall this formation be mined to avoid these difficulties? I do not intend to give a lecture on how to mine, but the mistakes noted in several of the mines inspected leads me to touch upon the points where much improvement can be made.

Care When Opening Up a Mine.

I say that great care should be used in opening up a mine. First ascertain the thickness of the deposit of ore and plan to carry it all in one cutting. I believe this to be better and cheaper mining than to make a first cutting and then take up stope.

Leaving Pillars For Supports.

Leave large pillars on at least two sides of the shaft. These pillars should be left far enough apart—or else a cutting should be made in each on the side next the shaft—so that the tub hooker will have plenty of room in which to work and at the same time be under the shaft as little as possible. This will also provide a passage way, so that crossing directly under the shaft may be avoided.

Formation Should Be Studied.

Study the formation carefully, and be sure to select the right stratum to leave for a cap rock. Carrying the roof too high almost invariably throws it into the white flint (called cotton rock), a very poor roof, and in carrying it too low seams of ore will be left, which is not only wasteful but makes an excellent parting for slabs. I have seen many sheet ground mines in which the air drift between two shafts had been driven at too high a level, either through misjudgment of the formation or else to keep away from water. Such places are almost always sources of danger and expense in the after-work of opening up from the air drift.

Formation of Slabs.

Once you have selected the proper cap rock, don't allow it to be weakened or broken by roof holes drilled too high. The constant "burning" of the roof by holes bedded too high is a prolific source of slabs.

Distance Between Pillars.

Go slowly as to widening out until you are sure of the formation, and above all, leave pillars of sufficient size, and leave them not over thirty to thirty-five feet apart—closer if a watercourse or bad roof makes it necessary. There can be no hard and fast rule for the leaving of pillars, because conditions are never exactly the same in any two mines, but wherever possible, pillars should be left in sets of five (like the five-spot on a dice), instead of leaving them in rows like the trees in an orchard. In mining language, split the drift every time when leaving a pillar. Nothing is lost by leaving plenty of pillars, because when the mine is worked out many of them can be trimmed, or drawn entirely, by judicious handling of the ground and use of timbers.

Advantages Derived.

If all of our sheet ground had been so cut many accidents would have been prevented, the ground would have been left in better condition for future mining, and, I believe, ultimately, a larger percentage of the ore mined.

Timbers In Place of Pillars.

In handling ground which has already been cut too wide, go around the wide places, or, if that is impossible, use timbers to take the place of the pillars that have been forgotten. Timbers are, at best, a poor substitute for pillars in hard ground, but they are better than no support at all. Where stope is not being taken up, or to be taken up, I recommend square sets, well keyed and braced, for this purpose, as against single posts or pens. Single posts do not have sufficient supporting bearing, and pens are very apt to settle away from the roof where ground is not taking weight. If single posts are used a cap or head block should always be used with them. Where stope is being taken up I believe pens, built of sawed timbers and filled with waste rock, are best; on account of their greater rigidity being better able to withstand the effect of heavy shots. A butt of the stope must be left as a foundation for such pens, and they must be kept tightly keyed up or they lose their value as a support to the roof. That heavy stope shots are very hard on the roof is a well known fact, and no attempt should be made to take up stope through a wide drift without the use of timbers.

General Principles of Timbering.

The general principles of timbering in soft ground are few and simple, although subject to almost infinite modification. The rules adopted by the best timbermen are to give the greatest strength to the principal timber units, thus having the sets stronger than the lagging. Should excessive strain develop, the lagging will show the effect first. The main sets can then be reinforced, either by doubling up or reducing the distance between sets, before any serious danger can result. In placing timbers use plenty of collar-braces, spreaders and sprags. Keep your timbers wooded up to the roof and keyed—anything in the nature of a "snow shed" is dangerous.

TRIMMING.

In mines that are not timbered, and especially in mines where high drifts are being cut or where the roof is inclined to be soft and slabby, too much attention cannot be paid to trimming. In such mines there should be at least one man whose sole duty it is to look after this work. Furnish this man, or men, with the necessary ladders, wedges or moils and bars—these tools should be a part of the equipment of every mine. Employ these roof trimmers before the accident occurs, thus avoiding it, instead of waiting until the horse is stolen to lock the stable doors. As the safety of many men will depend upon the thoroughness with which the trimmer does his work, it is needless to say that he should be a competent and reliable man, and a man of much experience in that particular line of work.

Use as little powder as possible in trimming roof. Whenever possible, loose slabs should be taken down with a bar or with hammer and moils.

Danger From Loose Slabs.

Loose slabs should be given immediate attention. Don't "wait until Sunday" to take them down, or for "the next round of shots to bring them." The ground foreman who is doing the right thing will make an examination of his mine the first thing every morning. He will frequently sound the roof in all drifts in which work is being done, and if men are working under a bad or doubtful roof he will take them out until the drift is made safe. I believe that all ground foreman should be furnished a good strong light with which to make such examination so that nothing may be overlooked.

Judgment and Vigilance.

In all mining the size and form of drifts, and the trimming of same, is largely a matter of judgment, and human judgment is never infallible—we all know of cases where falls of roof have occurred without warning and where least expected—hence the unavoidable accident, but good judgment and unceasing vigilance will prevent many accidents.

STORAGE AND HANDLING OF EXPLOSIVES.

Frozen Powder—Storage of Explosives.

With the approach of cold weather much trouble will be experienced by the mine operator with frozen powder unless he is properly equipped for its storage and thawing.

All explosives in excess of the amount required for a shift's work should be stored in a magazine provided for that purpose alone; said magazine to be placed far enough from the mill buildings and derricks to insure their remaining intact in event of the explosion of the entire contents of the magazine. Powder may be thawed and kept in good condition in this magazine by the heat from steam radiators. Exhaust steam only should be used for heating, and the temperature should be kept at about eighty degrees F., never over ninety-five degrees F. The powder should be placed on shelves, or in racks, as far as possible from the radiator or team pipes, never on same. Caps, oils, or other combustible substances should not be kept in the same magazine with explosives. The small operator, prospector and contractor should be equipped with a suitable thawing device.

Under no condition should powder be stored in underground workings where men are employed.

Powder In the Mine.

A safe place should be provided in the ground for powder taken down for daily use, where there is no possibility of its being exploded by a "squib" shot or boulder pop. A convenient place for this purpose can be made by cutting a small opening in a pillar or the wall of a drift; closing said opening with a door having a strong lock. This door should be kept locked and only opened to put in or take out powder. Keys should be carried only by the ground foreman and powder man. If possible this powder house should be lighted by an electric light hung outside of same, but under no condition should an open lamp be taken into it. Here, too, the exploders and shots should be kept separate from the main body of explosives.

Making Shots and Squibs.

Shots and squibs should be made up by the powder man (by the ground foreman where no powder man is employed), outside of the powder house and hung at a convenient place, at a safe distance from same, where they may be secured by the machine men as needed. All powder, squibs and shots not used should be returned to the place from which they were taken. Ground foremen and powder men should see that the mines are kept free from powder. With such a powder house there is no necessity or excuse for powder being kept in the open drifts where it is very liable to be exploded, and a fearful accident might ensue.

Firing of Boulder Pops.

The indiscriminate firing of boulder pops is a dangerous practice and should not be allowed. This work should be in charge of one man—preferably the shoveler boss, if one is employed—and whenever possible boulder pops should be fired at noon, or when going off shift.

Tamping Bars.

After so much has been said in regard to the matter, it would seem as if it would be unnecessary to call attention to the fact that all tamping bars should be of wood, and wood only, but, in spite of all that has been said and done, we still occasionally find tamping bars made of pieces of pipe with wood plugs in the ends.

Danger From Metal In Tamping Bars.

I notice that many powder men and machine men are in the habit of using steel nails in the ends of their tamping bars for the purpose of "railroading" powder in rough holes. I consider this to be a dangerous practice and one that has probably had a great deal to do with many mysterious premature explosions. The end of a wooden tamping bar can be sharpened for this purpose, or, if that is not considered sufficient, points made from oak skewers or heavy copper wire should be furnished, but never allow the use of nails or any metal that will strike a spark.

Hard Tamping Dangerous.

I have also noticed men tamping powder in a hole so hard that you could hear it ring. Nytro glycerine powder should never be tamped hard even with a wooden tamping bar, as it is not only dangerous but absolutely unnecessary. All that is needed is to fill the hole or the pocket so there will be no air spaces and, if the powder is properly split, this can be done by a firm pressure on the bar.

Loose gravel should never be used as tamping, as it will undoubtedly strike sparks.

Missed Shots, etc.

No missed hole should be approached under forty-five minutes. Failed holes should be cleaned out and squibbed before any blowing out is done. Powder should not be extracted from a hole which has once been charged.

No holes left standing should be deepened unless it be positively known that they have not been previously charged with explosives. No attempt should be made to load a hot hole. It is good practice to have a full round of holes drilled ahead so that holes drilled one day may be squibbed that night, on coming off shift, and loaded the next day, thus insuring that no hot holes will be loaded.

Firing By Electricity.

An electric battery should be used in firing all holes in shafts or in first opening up drifts from shafts.

HOISTING AND SHAFTS.

Hoistermen Should Be Competent.

Superintendents should use great care to see that their hoistermen are competent and experienced men, well qualified for a position of such responsibility.

Should Be Licensed.

There is not another man around the mine, with the exception, perhaps, of the ground foreman, who is so directly responsible for the safety of others, as the hoisterman. Several times each day he has the lives of the entire ground force in his hands, and the least inattention or mistake on his part while hoisting or lowering men is apt to result in a fatal accident. I am strongly in favor of a law requiring the licensing of hoistermen—with the growing use of larger and more complicated hoisting engines they may more properly be called hoisting engineers—such license to be granted only upon the passage of an examination as to practical competence and qualification, and to be revocable under certain conditions.

Inspecting Hoisting Machinery.

Hoistermen should make a close inspection every day of the hoisting machinery, and if any cable, hook or tub appears unsafe either to the hoisterman or tub hooker it should at once be reported.

Hoisting and Lowering Men.

Men should be hoisted and lowered with care and at a moderate speed. There is enough danger in riding a shaft in an open tub without being jerked up like a tub of dirt or dropped like an empty tub when going down.

Guard Top of Shaft.

The top of every shaft must be guarded so that persons or foreign objects cannot fall into the shaft.

Hand rails must be placed so that men entering and leaving tubs will have something to hold to and perhaps avoid a fatal slip.

Ice In Shaft.

See that the ground or platform around the top of your shaft is not covered with ice during cold weather. If your shaft is a downcast and ice is continually forming in it during winter, be sure that this ice is trimmed out every day. Several men have been killed in this district by ice falling in the shaft.

Making Top of Shaft Level.

No loose rock or boulders should be allowed to accumulate around the collars of shafts. The large derricks now being erected over shafts are generally placed on concrete foundations. I think that the surface around the shaft should be raised to the level of the top of this foundation say from two to four feet, the area raised being equal in extent to that of the foundation. This can be done very easily by making the foundation of the derrick a retaining wall and filling in with tailings. The tailings should be covered with a layer of fine cinders as the cinders pack more readily and furnish a firmer footing. The collar of the shaft should always be raised a few inches above any surrounding surface.

Loose Cribbing and Lacing Boards.

Watch for loose cribbing and lacing boards, and where the shaft has been sunk through hard ground and is not cribbed, keep it well trimmed and the corner pockets free from loose rock. It is very often the little things, which may easily be overlooked, that cause accidents.

Abandoned Shafts and Cave-ins.

The many abandoned shafts and cave-ins in this district are a menace to public safety—in many cases vertiable death traps—and I recommend the passage of a law requiring all such shafts and cave-ins to be securely covered or fenced, and in making it a misdemeanor to remove such covering or fences. The inspectors are often censured for not forcing the protection of such places, but how can we do it when there is no statute under which we can bring proceedings. In the absence of such a statute, every land owner, lease holder, and operator, as a matter of principle, should see to it that no such places are allowed to remain unguarded on their lands or leases.

Improved Shafts.

I do not think the time has arrived when cages should be required in the shafts of the Western District, but I do think that the best answer that can be made to those who say that cages should be required, is, to put our shafts in better condition, use more care in hoisting, and thus reduce the number of shaft accidents.

DISCIPLINE, RULES, AND REGULATIONS.

Discipline.

With the advent of larger mining operations in this district the need has become imperative for better discipline and system in the mines. In the small mine, employing only ten or twenty men underground, the foreman can give personal oversight and direction to each man, but in the large mines this is impossible and there is consequently more or less confusion.

Rules and Regulations.

In this connection I recommend that every large mine adopt a good and comprehensive set of rules and regulations. Post them securely in conspicuous places and then see that they are enforced. Every operator will probably have his own ideas as to what should be included in such rules and regulations, but among other things, they should prohibit the fast hoisting and lowering of men; crowding about the top or bottom of the shaft at whistle time; unnecessary yelling and hallooing in the ground, and especially upon the part of men being hoisted or lowered in shaft. In some mines inspected there was so much of this going on that it was next to impossible to distinguish a signal for squib or boulder pop. Men should not yell while being hoisted or lowered unless in case of accident. The rules should also cover the storage and handling of explosives; the reporting of missed holes, and there is one rule, especially, which I would like to see adopted by every operator. That is: "Miners are to examine roof as closely as possible each morning. Bad or dangerous places must be reported to the ground foreman immediately. No man will lose his job by declining to work in a dangerous place."

Experienced and Competent Foremen.

In an article in the Mining World, Matt. W. Alderson says: "The mine superintendent or manager should be a man experienced in the business—knowing it from A to Z—and who has a definite idea of what he wishes to accomplish and how to do it. He should select an experienced and competent foreman who will see that his ideas are intelligently and faithfully carried out. What would we think of a general who left the conduct of his campaign to his corporals? And yet that is the policy of some mine superintendents and managers—those who leave everything to the judgment or whim of those under them. Is it any wonder that an enterprise conducted under such a system very often proves a failure? The shrewd superintendent will counsel with those under him, but he will be valueless as a man in charge if he does not assume the responsibility and do the directing himself. This does not mean that he will give orders to his workmen. He must lay out the work and leave the details to his foreman, at the same time seeing that it is done as he wishes, in the way he wishes." I certainly agree with Mr. Alderson in that, and I have no patience with the superintendent who lays the blame on the ground foreman for wide cutting of ground, etc. It is the superintendent's business to see that his ground is cut right. The same applies to the ground foreman who blames the machine men for drilling a round of holes where a pillar has been started, just because it happened to furnish a fine break, or for bedding roof holes too high and breaking the cap rock. It is his business to see that such things are not done.

Inexperienced Men and Accidents.

One of the best and most experienced ground foremen in the district once said to me, when asked what in his opinion was the greatest cause of accident in our mines: "Too many superintendents who don't know the business, and too many 'apple-knockers' running ground." By "apple-knockers" he meant incompetent men, and I am inclined to think—judging from the condition of some mines inspected—that he was right to a certain extent. The law requiring licensing of hoistermen might also be applied with good results to the ground foremen, and even the superintendents.

VENTILATION AND SANITARY CONDITIONS.

While on the subject of accidents I would also like to say a word in regard to the ventilation and sanitary conditions of our mines.

We are all familiar with the disease known as miner's consumption and its deadly ravages among the mine workers of this and other districts.

I have no statistics upon which to base the assertion, but I am sure that the number of miners who die annually from this disease is far greater than the number killed in mine accidents. The fact that workers in hard ground are more subject to it than those in soft ground, and machine men more so than other ground men, leads me to believe that it is caused by the constant breathing of air laden with rock dust and lamp smoke. It should also be remembered that the large quantities of explosives used in the hard ground mines seriously vitiate the air and leave a residue of noxious gases. Improved ventilation, sprinkling to lay the dust and the use of smokeless lamps is the surest solution of the problem, the need being for the application of well known practices, rather than anything new.

Mechanical Ventilation.

In mines where the natural ventilation is not sufficient, mechanical ventilation should be resorted to. There can be no doubt that in order to insure a thorough and constant ventilation in such mines the use of a powerful fan is the most certain to produce the desired results. As an instance of this, here in this district, I cite the fan now being operated by the Carmean-Squires Company, at Porto Rico. Here the fan house is built over an abandoned shaft, the building and air ways being so constructed that the fan may be operated as an upcast or downcast by simply changing two doors. The fan is twelve feet in diameter and is driven by an electric motor.

The thorough ventilation of sheet ground mines, where acres of ground are cut out and left standing on pillars, is sometimes a difficult proposition. Even where the natural ventilation is, as a whole, good by reason of several shafts, and perhaps connection with other mines, it occasionally happens that so-called "dead ends" will develop by the driving ahead of certain drifts out of the course of the air currents. In such cases—unless connection can be made with another shaft or drift—I recommend that large drill holes be drilled, tapping the "dead ends," and suction fans or blowers installed over

Sprinkle Dusty Mines.

In dry mines a large amount of rock dust is formed by the blasting, drilling and other operations incident to mining. This dust being somewhat heavier than air, even good ventilation will not remove all of it. In mines of this kind sprinkling should be resorted to. Where pumps are operated, connection can be made from the discharge of the pumps to the air lines for this purpose, and where no pumps are operated a water connection can be made with the air line at the top of the shaft, thus providing for sufficient pressure of water in the air lines. This water connection being provided, the machine men can, by means of their air hose, give the roof, working faces, and piles of dirt a thorough flushing, effectually laying all dust. Whenever possible all holes should be drilled wet and all squibbing and breaking of boulders should be done when going off shift, thus avoiding dust and also danger of accident. The use of acetylene lamps should be encouraged on account of their smokeless feature. This should be especially appreciated by machine men working in low headings and by men working in aid drifts, prospect drifts or, in fact, any close place.

I wish to impress upon every operator the need for a good, warm, and, above all, clean change house fitted up with lockers for the dry clothes of the men. Such a house is an absolute necessity, especially in this kind of weather, and no mine should be without one. It is not very pleasant, and certainly not conducive to good health, to come up out of the ground, at the end of a shift, warm and perspiring—perhaps wet through—and have to face zero weather in wet shoes and clothing on the way home.

INSPECTION.

Value of Inspections.

A great many people, not understanding the conditions, will say that the mine inspectors should look after all these things and should be responsible for all of the workings being maintained in a safe condition. In reply I will say that we are doing the best we can, and since we have been in office have made some hundreds of recommendations to the management of the different mines inspected, with the view to correcting the various defects noted, but there are many mines in this district and our visits to each mine are necessarily far apart. About the best we can hope to do is to visit each mine once or twice a year. A moment's consideration will show that the inspectors cannot be held responsible for all of the workings being maintained in safe condition, as nothing less than daily inspection of each mine would be required. Furthermore, the inspectors cannot assume responsibility for work which they are not directing nor for men over whom they have no control. In addition to this, conditions are constantly changing in these mines and the mine that is inspected today and passed as being safe, may, in a week's time, be dangerous. As the drifts are driven ahead a change of formation may be encountered or a slab develop in the roof, etc. The responsibility of safely carrying on the operations of mining must rest on the management, its officers, and the miners themselves. The work of inspection would be greatly facilitated if the miners would report to the inspectors all bad or dangerous places or conditions in the mines in which they are working, places or conditions which have been reported to the management and not given immediate attention by them. The inspectors would thus be enabled to at once reach the points where the need was greatest. Miners, we ask you to do this, and you may rest assured that your confidence will not be violated.

The Prevention of Accidents.

Now, one of the foremost mining engineers in St. Louis once said to me: "The betterment of conditions, and the prevention of accident, in the mines of the western district is simply a matter of education and evolution." There is some measure of truth in that statement, but, gentlemen, remember that while we are being educated men are being killed and crippled—men just the same as you and I; every year sees an increase in the number of widows and orphans of the victims of mine accidents—and let us hurry along the process.

RULES FOR UNDERGROUND EMPLOYES.

HOISTERMEN.

Hoistermen will not allow persons other than employes to enter the mine without an order from the superintendent.

All men must be handled with care, and hoisted and lowered at a moderate speed.

If more than ——— men attempt to ride at a time, refuse to hoist or lower them.

Men must not crowd about the shaft at whistle time.

Hoistermen and hookers must see that alarm bell is working properly each morning and noon; if out of order it must be reported to the ground boss immediately.

In hoisting or lowering steel cans, or other heavy material, ring alarm bell before starting, and turn off after load reaches top or bottom.

Hoisting machinery ropes and hooks must be examined each morning and noon and all defects reported to superintendent or ground boss.

MINERS OR MACHINE MEN.

Miners or machine men should examine the roof where they are required to work.

Bad or dangerous places must be reported to ground boss immediately.

No man will lose his job for reporting or declining to work in a dangerous place.

Always examine heading for failed holes.

Failed holes must be thoroughly spooned out and then squibbed before blowing out is done.

Powder must not be extracted from holes which have once been charged.

Holes left standing must not be deepened unless it be positively known that they have not been previously charged with explosives.

EXPLOSIVES.

Dynamite to be used in this mine shall be kept only in places designated, and not more thereof than is necessary for immediate use.

No caps or squibs shall be stored with dynamite, nor shall any caps be taken to where dynamite is stored for the purpose of making up primers or squibs.

Men appointed to fire holes in the mine shall not fire until they have first given warning and made certain that all employes and other persons have retired to a safe distance from the vicinity of said firing.

After all holes have been fired, men who have done the firing shall make a thorough examination of all holes charged and shall designate in some way the holes missed and undischarged, and report same to ground foreman.

All unused powder and shots shall be returned to place from which they were taken. Ground foreman and powder men must see that the mine is kept free from all unused powder.

All boulder popping must be done by men whose business it is to do this; others must not use dynamite for this purpose.

No attempt must be made to load hot holes.

No metal tamping rods shall be used in this mine. Wooden tamping rods will be furnished as needed.

Steel nails must not be used in ends of tamping rods.

These precautions, if observed, will help to avoid accidents due to carelessness.

STATISTICAL.

COAL.

Table 1—Location of Mine, Capitalization, Amount Invested in Land and Plant, Incorporated under Laws of What State, Location of Land, Acres of Coal Land Owned or Leased, Shipping Facilities.

ADAIR COUNTY.

Name of company or person operating.	Location of mine.	Capitalization.	Amount invested in land and plant.	Incorporated under laws of	Location of land.			Acres of land.		Shipping facilities.
					Sections.	Township.	Range.	Owned.	Leased.	
Arctic Coal Co	Novinger		$1,500		29	63	16		7	I. & St. L. and Q., O. & K. C.
Big Creek Coal Co	Kirksville		3,000		13–14	62	16	9	80	Wabash and Q., O. & K. C.
Consolidated Stahl C. Co	Stahl	$30,000	20,000	Missouri	34–35	64	17		320	Q., O. & K. C.
Great Northern Fuel Co:										
Mine No. 1	Novinger	300,000		Missouri					200	I. & St. L. and Q., O. & K. C.
Mine No. 21									640	I. St. L. and Q., O. & K. C.
Mine No. 23									400	I. & St. L. and Q., O. & K. C.
Hazel Creek Coal Co	Connelsville		125		2	63	16		2	I. & St. L.
Ivie, J. M. & Sons	Kirksville			Missouri	7	61	15	218		Q., O & K. C. and Wabash.
Kansas City Midland C. Co	Novinger	50,000	110,000	Missouri					1,200	Q., O. & K. C. and Q. & St. L.
Lee, John	Connelsville								4	I. & St. L.
Manufacturers C. & C. Co:										
Mine No. 1	Connelsville	500,000	800,000	Missouri	8–9–16	63	16	44	480	Q. & St. L.
Mine No. 4					4–9	63	16	380	380	
Mine No. 50					32–31	63	16	72	457	
Rombauer Coal Co:										
Mine No. 2	Novinger	150,000		Missouri	17	63	16	300	1,400	Q., O. & K. C. and I. & St.
Mine No. 3					19–20	63	16			
Mine No. 4					28–29	63	16			
Star Coal Co	Kirksville	33,000	37,500	Missouri	6–7–8	62	35		2,300	Q., O. & K. C. and Wabash.

AUDRAIN COUNTY.

Name of company or person operating.	Location of mine.	Capitalization.	Amount invested in land and plant.	Incorporated under laws of	Sections.	Township.	Range.	Owned.	Leased.	Shipping facilities.
Audrain Coal Co	Vandalia	$10,000	$10,000	Missouri	12	52	6		320	C. & A.
Davidson, Henry W	Laddonia		800		17	51	6	200	10	C. & A.
Lowder, Peterson Coal Co	Farber	50,000		Missouri	21	52	6		160	C. & A.
Martinsburg Coal Co	Martinsburg		30,000							C., B. & Q. and Wabash.
Self & Williams	Laddonia		3,000		17	51	6	120		C. & A.
Standard C. & M. Co	Vandalia	6,000		Missouri				34		C. & A.

TABLE 1—Continued.

BARTON COUNTY.

Name of company or person operating.	Location of mine.	Capitalization..	Amount invested in land and plant........	Incorporated under laws of	Location of land.			Acres of land.		Shipping facilities.
					Sections.	Township.	Range...	Owned...	Leased...	
Betz, Jacob	Liberal		$200	Missouri	12		33	10		K. C.,C. & S. and Fris., and M.P
Cackley, R. E	Milford		500		26	33	29	20		
Clark Bros	Lamar				24	32	31	40		K. C.,C. & S.and M.P. and Fr.
Creekmore, W. P	Liberal		26,000		24			632		K. C.,C. & S. and Fris. and M.P
Correlli Coal Co	Ardoth									Frisco R. R.
Davis Coal Co	Mulberry		300						15	K. C. S. and Frisco R. R.
Friedling, W. H	Joplin				19				300	K. C. So. R. R.
Geivet, W. H	Milford		6,600		6	32	29	88		None.
Lasley, W. B	Mindenmines				19	32	33		10	M. P. and Frisco R. R.
Lavery, W. J	Liberal		1,500		1	32	33		30	M.P. and Fris. and K. C.,C. & S
Lawrence, Frank	Milford		1,000					20		None.
Mulkins, T. E	Milford				21	29	31		30	None.
Orahood, A. J	Lamar				12	31	31		¼	K. C.,C. & S. and M.P. and Fris.
Orahood, Wm	Lamar				12	31	31		¼	K. C.,C. & S. and M.P. and Fris.
Patterson, W. W. Coal Co	Minden				20	32	33	80		Mo. Pac. and Frisco R. R.
Peck & Brummett	Lamar								160	K. C., C & S. and M.P. and Fr.
Pittsburg Coal Co	Mulberry, Kas	$6,000	8,000							K. C., S. and Frisco R. R.
Pittsburg & Midway C. M. Co	Midway, Kas	200,000	29,400	Missouri	7	31	33		290	Frisco R. R.
Pullen & Sons Coal Co	Minden		6,000	Missouri					160	Mo. Pac. and Frisco R. R.
Stephenson, J. J. Coal Co	Minden								80	Mo. Pac. and Frisco R. R.
Stone, C. T	Milford				26	33	29	60		None.
Taylor, R. J	Milford		400		24	33	29	20		None.
Wear Coal Co	Minden	200,000			6–32	32	33			Mo. Pac. and Frisco R. R.
Western C. & M. Co., Nos. 9 & 17	Minden	1,000,000			30	32	33	320		Mo. Pac. and Frisco R. R.

BATES COUNTY.

Name of company or person operating.	Location of mine.	Capitalization..	Amount invested in land and plant........	Incorporated under laws of	Sections.	Township.	Range...	Owned...	Leased...	Shipping facilities.
Amsterdam Coal Co	Amsterdam				20	41	33			K. C. S. R. R.
Atlas Coal M. & M. Co	Sprague	$20,000	$38,000	Missouri	25	39	33			K. C., F. S. & M. R R.
Ayer, U	Rich Hill				25					K. C., F. S. & M. & Mo. Pac.
Baker, Jos	Amsterdam							120		K. C. S. R. R.
Carr Coal M. & M. Co.	Rich Hill	2,800		Missouri				110		K. C., F. S. & M. and Mo. P.
Decker H. W	Amsterdam		350					3		K. C. S. R. R.
Diller Sam	Appleton City				29	3	39	180		M. K. & T. R. R.
Dunkerly Coal Co	Worland	8,000	4,500						80	K. C., S. R. R. and Mo. Pac.
Fleming Coal Co.	Rich Hill	2,000	1,000	Missouri	36	32	39	80		Mo. Pac. and K. C., F. S. & M.
Harris, J. A	Worland				19		33	160	80	K. C., S. R. R. and Mo. Pac.
Hair, Miller & Bradford	Foster			Missouri						Mo. Pac. R. R.
Henley, R. J	Sprague				4	32	33	160		K. C., F. S. & M. R. R.

TABLE 1—Continued.

BATES COUNTY—Continued.

Name of company or person operating.	Location of mine.	Capitalization.	Amount invested in land and plant	Incorporated under laws of	Location of land.			Acres of land.		Shipping facilities.
					Sections.	Township.	Range	Owned	Leased	
Heckadon, P. L	Foster				14	39	33		40	Mo. Pac.
Holland Coal Co	Hume	$2,000	$3,000	Missouri	2		33	160		K. C., F. S. & M. and K. C. S.
Johnson, King	Hume		3,500		16			70		K. C., F. S. & M. and K. C. S.
McClendon, Harry	Rockville	300	300		2	38	30		37	M. K. & T. R. R.
McConnell, W. A. & Sons	Foster		800						27	Mo. Pac. R. R.
Metzler & Shelton	Foster								1	Mo. Pac. R. R.
Pearson Bros	Rich Hill		4,100		4	38	31	100		K. C., F. S. & M. and Mo. Pac.
Peeler, D. D	Appleton City		20,000		29	39	29	450		M. K. & T. R. R.
Ritchie, H. C	Rich Hill		13,000		17	38	31	130		K. C., F. S. & M. and Mo. Pac.
Scott, Thos. B	Foster		200					5		Mo. Pac. R. R.
Smalley, J. M	Amsterdam				4	40	33			K. C. S. R. R.
Sprague Coal Co	Sprague		100							K. C., F. S. & M. R. R.
Tarver, E. R	Rich Hill		150							K. C., F. S. & M. and Mo. Pac.
Tatley, J. V	Worland		5,000				33		80	K. C. S. and Mo. Pac. R. R.
Wear, Emmet	Rich Hill		4,000		29	39	31	40		K. C., F. S. & M. and Mo. Pac.

BOONE COUNTY.

Name of company or person operating.	Location of mine.	Capitalization.	Amount invested in land and plant	Incorporated under laws of	Sections.	Township.	Range	Owned	Leased	Shipping facilities.
Davis & Watson	Columbia	$25,000	$10,000	Missouri	19	49	12		200	M. K. & T. and Wabash R. R.
Davis, Isaac R	Brown's Station		8,000		8	49	12	110	20	Wabash R. R.
McGee, Lonnie	Centralia				9	51	10		10	C. & A. and Wabash R. R.
Prather, W. R	Columbia				58	49	12	220	120	M. K. & T. and Wabash.
Shock, R. L	Columbia		3,000					30		M. K. & T. and Wabash R. R.
Sutton, W. C	Columbia				33	49	12	375		M. K. & T. and Wabash R. R.

CALDWELL COUNTY.

Name of company or person operating.	Location of mine.	Capitalization.	Amount invested in land and plant	Incorporated under laws of	Sections.	Township.	Range	Owned	Leased	Shipping facilities.
Caldwell Coal Co	Hamilton	$50,000	$50,000	Missouri	17	57	27		1200	C. B. & Q. R. R.

CASS COUNTY.

Name of company or person operating.	Location of mine.	Capitalization.	Amount invested in land and plant	Incorporated under laws of	Sections.	Township.	Range	Owned	Leased	Shipping facilities.
Creighton Tile & Coal Co	Creighton	$10,000	$10,000						317	K. C., C. & S. R. R.

TABLE 1—Continued.

CALLAWAY COUNTY.

Name of company or person operating.	Location of mine.	Capitalization.	Amount invested in land and plant.	Incorporated under laws of	Location of land. Sections.	Township.	Range.	Acres of land. Owned.	Leased.	Shipping facilities.
Bell, Eli	Fulton								20	C. & A. R. R.
Clark, Geo. W	Fulton		$400		35	48	11		40	C. & A. R. R.
Fulton Coal Co	Fulton	$2,400	1,000	Missouri	20	47	9		100	C. & A. R. R.
Fulton Fire Brick Co	Fulton	120,000	64,450	Mssouri	18	47	9	35		C. & A. R. R.
Harris & Trigg	Fulton	2,000	2,000		17	47	9			C. & A. R. R.
Morsinkhoff, John	Fulton		50						2	C. & A. R. R.
Nickolson, C. M	Stephen's Store	500	250		30	49	11		10	Wabash R. R.
Reed, J. W	Fulton	300	300	Missouri		47	10		40	C. & A. R. R.
Simmons, J. W	Fulton		1,500						90	C. & A. R. R.
Skelley, E	Stephen's Store							30		Wabash R. R.
Smith, David	Fulton				17	47	9		190	C. & A. R. R.
Sulzer, J. W	Fulton		75		10		9			C. & A. w. R.

CARROLL COUNTY.

Name of company or person operating.	Location of mine.	Capitalization.	Amount invested in land and plant.	Incorporated under laws of	Sections.	Township.	Range.	Owned.	Leased.	Shipping facilities.
Cowan, R. M	Hale		$6,000					160		C. B. & K. C. R. R.
Kenyon, J. A	Bosworth				7	8	21	100		A., T. & S. F. R. R.
O'dell, James	Hale									C., B. & K. C. R. R.

CHARITON COUNTY.

Name of company or person operating.	Location of mine.	Capitalization.	Amount invested in land and plant.	Incorporated under laws of	Sections.	Township.	Range.	Owned.	Leased.	Shipping facilities.
Ceraenka, Joseph	Summer				8	56	20		40	None.
Collett, Lizzie M	Keytesville		$3,000		12	54	18	103		Wabash R. R.
Dooley, J. A	Keytesville				25	54	18	190		Wabash R. R.
Kahler, W. J	Mendon					55	20	140		A., T. & S. F. R. R.
Kingsley, Bros	Keytesville									Wabash R. R.
Rothville C. & M. Co	Rothville				4	56	20		2	A., T. & S. F. R. R.
Strickland, J. C	Rothville									A., T. & S. F. R. R.
Watson, S. E	Keytesville				13	54	18	40		Wabash R. R.

CLAY COUNTY.

Name of company or person operating.	Location of mine.	Capitalization.	Amount invested in land and plant.	Incorporated under laws of	Sections.	Township.	Range.	Owned.	Leased.	Shipping facilities.
Missouri City Coal Co	Missouri City	$10,000	$20,000	Missouri	30–31	7–8	54	2	700	Wabash R. R.

TABLE 1—Continued.

COLE COUNTY.

Name of company or person operating.	Location of mine.	Capitalization.	Amount invested in land and plant.	Incorporated under laws of	Location of land.			Acres of land.		Shipping facilities.
					Sections.	Township.	Range.	Owned.	Leased.	
Bandelier, S. & A.	Elston				2-10-11	44	13		40	Mo. Pac.

DADE COUNTY.

Name of company or person operating.	Location of mine.	Capitalization.	Amount invested in land and plant.	Incorporated under laws of	Sections.	Township.	Range.	Owned.	Leased.	Shipping facilities.
Hickman, O.	Sylvania		$8,000		20			120		Frisco and K. C., C. & S. R. R.
Stout, W. A.	Sylvania		100		20	32	28		160	Frisco R. R.
Windes, W. H.	Sylvania		2,500		22	32	28	80		Frisco R. R.

GRUNDY COUNTY.

Name of company or person operating.	Location of mine.	Capitalization.	Amount invested in land and plant.	Incorporated under laws of	Sections.	Township.	Range.	Owned.	Leased.	Shipping facilities.
Trenton Mining Co.	Trenton	$30,000	$45,000	Missouri	16	61	24	15	70	C., R. I. & P. and Q., O. & K. C.

HENRY COUNTY.

Name of company or person operating.	Location of mine.	Capitalization.	Amount invested in land and plant.	Incorporated under laws of	Sections.	Township.	Range.	Owned.	Leased.	Shipping facilities.
Anaconda Coal Co.	Deepwater				12	40	26		40	K. C., C. & S. R. R.
Bowen Coal Co.	Bowen	$10,000	$75,000	Missouri					3,000	C., R. I. & P. R. R.
Brush Coal Co.	Deepwater	2,000	3,000	Missouri	36	40	25		70	K. C., C & S. R. R.
Dickey, W. S.	Deepwater		3,000		14	40	26	40		K. C. C., & S. R. R.
England, James C. Co.	Deepwater		700		13	40	26		40	K. C., C. & S. and Frisco R. R.
Hughes, W. E.	Windsor		300		13	43	24			M., K. & T. and St. L., K. C. & C. R. R.
Hurst Coal Co.	Deepwater	4,000	40,000	Missouri					80	K. C., C. & S.
Lane, M. E.	Clinton		400						80	K. C., C. & S. and M., K. & T. and Frisco.
Lewis Coal Co.	Lewis				9	42	25	40		M., K. & T R. R.
Parks, A. F.	Calhoun				34	43	25		100	M. K. & T. R. R.
Pharis & Rivers	Clinton		500		11	41	26	160		K. C., C. & S. and M., K. & T. and Frisco.
Reese, Wm.	Deepwater		150						40	K. C., C. & S. R. R.
Rusk, W. H.	Deepwater				31	40	26	160		K. C., C. & S. R. R.
Standard Coal Co.	Deepwater		600				26		80	K. C., C. & S. R. R.

TABLE 1—Continued.

HOWARD COUNTY.

Name of company or person operating.	Location of mine.	Capitalization.	Amount invested in land and plant	Incorporated under laws of	Location of land.			Acres of land.		Shipping facilities.
					Sections.	Township.	Range	Owned	Leased	
Collins, W. H	Fayette					49	15	125		M., K. & T. R. R.
Pitney, Alexander	Higbee						15	150		M., K. & T. and C. & A. R. R.
Pitney, O. S	Russell				36	52	15	5	200	M., K. & T. R. R.
Rohr, O. B	Fayette								10	M., K. & T. R. R.

JOHNSON COUNTY.

Name of company or person operating.	Location of mine.	Capitalization.	Amount invested in land and plant	Incorporated under laws of	Sections.	Township.	Range	Owned	Leased	Shipping facilities.
Burns, M. F	Knobnoster		$2,000		16	46	24		40	Mo. Pac. R. R.
Bullock, D. A	Warrensburg		1,150						126	Mo. Pac. R. R.
Bullock, P. H	Montserrat				23	46	25	1,000	40	Mo. Pac. R. R.
Jacobs, W. D	Warrensburg		450		23	46	26		40	Mo. Pac. R. R.
Meily, M. B.	Warrensburg		200		19	46	25		30	Mo. Pac. R. R.
Millard, Frank	Montserrat							1,000		Mo. Pac. R. R.
McGrath, John	Knobnoster				33	47	24	80		Mo. Pac. R. R.
Sutherland Coal Co	Sutherland	$15,000	12,000	Missouri	20–21	44	24		270	M., K. & T. R. R.

LAFAYETTE COUNTY.

Name of company or person operating.	Location of mine.	Capitalization.	Amount invested in land and plant	Incorporated under laws of	Sections.	Township.	Range	Owned	Leased	Shipping facilities.
Aull, Edward Coal Co	Lexington	$25,000		Missouri					360	A., T. & S. F. and Mo. Pac.
Arnschild, John	Concordia				24		24	120		Mo. Pac. R. R.
Bell & Greer	Lexington		$14,000		33	51	27	10	60	A., T. & S. F. and Mo Pac.
Bonanza Coal Co	Higginsville		30,000		32			6	125	C. & A. and Mo. Pac. R. R.
Boedeker Coal Co	Higginsville		11,000		14		26			C. & A. and Mo. Pac. R. R.
Canterbury & Griffith	Higginsville		1,000						30	C. & A. and Mo. Pac. R. R.
Clay, Tom	Higginsville				22	49	26	210		C. & A. and Mo. Pac. R. R.
Cary, B. F	Mayview		10,000						140	C. & A. R. R.
Corder Coal Co	Corder		1,000		35	50	25		115	C. & A. R. R.
Diamond Coal Co	Corder	10,000		Missouri	25–26–35	50	25	40	4	C. & A. R. R.
Dover Coal Co	Dover	100,000	100,000	Illinois	16–17	51	25	500		Mo. Pac. R. R.
Duncan, Harvey	Lexington							10		A., T. & S. F. and Mo. Pac.
Emison, S. G	Higginsville				15	49	26	150		C. & A. and Mo. Pac. R. R.
Farmers' Coal Co	Higginsville	150,000	300,000	Missouri				25	900	C. & A. and Mo. Pac. R. R.
Fallman, Ed	Wellington						27	105		Mo. Pac. R. R.
Gann & Bledsoe	Odessa		300		17	48	28		3	C. & A. R. R.
Hohenwald Bros	Corder		7,000		22	50	25	60		C. & A. R. R.
Independence C. M'g. Co	Napoleon	40,000		Missouri				1	80	Mo. Pac. R. R.

TABLE 1—Continued.

LAFAYETTE COUNTY—Continued.

Name of company or person operating.	Location of mine.	Capitalization..	Amount invested in land and plant........	Incorporated under laws of	Location of land.			Acres of land.		Shipping facilities.
					Sections.	Township.	Range...	Owned...	Leased...	
Kratz, & Son	Higginsville								25	C. & A. and Mo. Pac. R. R.
Labor Exchange No. 305	Wellington			Missouri				6		Mo. Pac. R. R.
Lanning-Harris C. & C. Co	Wellington	$127,600	$95,000	Missouri				30		Mo. Pac. R. R.
Martens, Jacob	Concordia		50		24		25		104	Mo. Pac. R. R.
McGrew Coal Co	Lexington	30,000		Missouri		51	28	1,100		A., T. & S. F. and Mo. Pac.
Painter, C. S	Mayview									C. & A. R. R.
Plattenberg Coal Co	Lexington	2,000	2,000	Missouri	33	51	27	30		A. T. & S. F. and Mo. Pac.
Rost, Wm	Concordia		1,800		13	48	25	20		Mo. Pac. R. R.
Sebastian, R	Higginsville		15,000						160	C. & A. and Mo. Pac. R. R.
Sipe, C. C. & Son	Lexington				33	51	27		15	A., T. & S. F. and Mo. Pac.
Stolen, Anton	Corder		4,000		23	50	25	60		C. & A. R. R.
Stoll Bros	Higginsville				25	50	26	280		C. & A and Mo. Pac. R. R.
Summers, M. W	Alma		4,000		25–26	49	26	130		C. & A. R. R.
Tyler, J. W	Aullville				20	49	25			None.
Van Guilder, E. M	Myrick				5	50	27	120		Mo. Pac. R. R.
Waverly Brick & Coal Co	Waverly		200,000		15-16-21-22–23–27	51	2425	2,000		Mo. Pac. R. R.
Western C. & M. Co., South	Lexington	1,000,000			16	50	27			A., T. & S. F. and Mo. Pac.
Western C. & M. Co., Summit					9	50	27			
Western C. & M. Co., Midway					9	50	27			
Western C. & M. Co., Valley					4	50	27			
Wegener, J. C	Higginsville		1,000		5	49	25	233		C. & A. and Mo. Pac. R. R.
Whitley, Scott	Lexington				30	50	27			A., T. & S. F. and Mo. Pac.
Wright, Sam'l & Frank	Lexington		600					10		A., T. & S. F. and Mo. Pac.

LINN COUNTY.

Name of company or person operating.	Location of mine.	Capitalization..	Amount invested in land and plant........	Incorporated under laws of	Sections.	Township.	Range...	Owned...	Leased...	Shipping facilities.
Barr, Chas	Brookfield							102		H. & St. J. R. R.
Bucklin Coal Co	Bucklin	$15,000	$8,200	Missouri	3	57	18	10	300	H. & St. J. R. R.
Crandall, W. E	Brookfield				5	57	19	2	80	H. & St. J. R. R.
Landreth Coal Co	Marceline				30	57	18	80		A., T. & S. F. R. R.
Marceline C. & M. Co	Marceline	8,000	8,000	Missouri	20–21–29–32–33	5657	18	82		A., T. & S. F. R. R
Sheehan, J. E	Brookfield		3,000		9	57	19	1	39	H. &. St. J. R. R.
Wine, G. C	Brookfield		12,000		32–33	58	19	120		H. & St. J. R. R.

TABLE 1—Continued.

Name of company or person operating.	Location of mine.	Capitalization.	Amount invested in land and plant.	Incorporated udder laws of	Location of land.			Acres of land.		Shipping facilities.
					Sections.	Township.	Range.	Owned.	Leased.	
LIVINGSTON COUNTY.										
Cox, Ira B.	Chillicothe		$100		11	58	24		5	H. & St. J. and Wabash R. R.
Fulwood, Wm	Mooresville		5,000		8–9	57	25	85		H. & St. J. R. R.
MACON COUNTY.										
Badgerow, David	Keota		$100						20	M. & La. R. R.
Central Coal & Coke Co., No. 28.	Ardmore	$7,000,000			13–14	56	15	360	240	M. & La. R. R.
Central Coal & Coke Co., No. 61.	Keota				13–14	56	15	1,930	20	M. & La. R. R.
Central Coal & Coke Co., No. 66.	Keota				2–3–34–35	5657	15	500	80	M. & La. R. R.
Central Coal & Coke Co., No. 25.	Keota				3–4–33–34	5657	15		312	M. & La. R. R.
Dennis, J. H.	Macon	20,000	35,000			57	14	40		C., B. & Q. and Wabash R. w.
Hurd & Hurd	Macon		3,000		19	57	14	40		C., B. & Q. and Wabash R. R.
Isaacson & Underwood	Callao		500		20	57	15		20	H. & St. J. R. R.
James Bros	Bevier				9	57	15	40		H. & St. J. and M. & La. R. R
Jones, Jno. H	Bevier		5,000		10	57	15	71		H. & St. J. and M. & La. R. R.
Lehman, H. A	College Mound		2,800		22	56	15		80	
Lunsford, H. W	Macon		1,200			57	14	40		H. & St. J. and Wabash R. R.
Northwestern C. & M. Co.	Bevier	300,000	300,000		22–23	57	15	400		C., B. & Q. R. w.
Parry, J. P	Bevier									H. & St. J. and M. & La. R' w.
MONITEAU COUNTY.										
Monarch Coal & Mineral Co.	Barnett	$60,000	$45,000	Missouri	15	43	16	100		None.
MONTGOMERY COUNTY.										
Biddleman, Wm	Wellsville		$1,000		4	49	6		50	C., B. & Q. and Wabash R. R.
Hammett, C. E.	Wellsville				52			7		C., B. & Q. and Wabash R. R.
Noel, Buford	Wellsville		1,000		4	49	6	50		C., B. & Q. and Wabash R. R.
Whitehead & Sons	Wellsville		1,500		49	50	6		23	C., B. & Q. and Wabash R. R.

TABLE 1—Continued.

Name of company or person operating.	Location of mine.	Capitalization.	Amount invested in land and plant.	Incorporated under laws of	Location of land.			Acres of land.		Shipping facilities.
					Sections.	Township.	Range.	Owned.	Leased.	
				MONROE COUNTY.						
Gilbert, J. B.	Paris		$2,400		32	55	10	80		M., K. & T. and Wabash R. R.
				MORGAN COUNTY.						
Ouachita C. & C. Products Co.	Versailles	$1,000,000		Arizona	22	43	18	1,720		Mo. Pac. and R. I. R. R.
				PLATTE COUNTY.						
Home Riverside Coal Co	Leavenworth, Kas.	$650,000	$557,978	Ohio				1,100		C. B. & Q. R. R.
				PUTNAM COUNTY.						
Baugher, A. W	Mendota		$1,100		25	67	18	105		C., B. & K. C R. R.
Hawkins, John	Mendota				25	67	18	80		C., B. & K. C. R. R.
Humphreys, Richard	Livonia					66	17	76		C., B. & Q. R. R.
Jones, Geo. F	Coatesville				5	66	16		112	Wabash R. R.
Means & De Garmo	Unionville		6,000		10	65	19	240		C., B. & K. C. R. R.
Mendota Coal Co., No. 7	Mendota	$200,000	160,000	Maine	35	67	18			C., B. & K. C. R. R.
Mendota Coal Co., No. 2	Mendota				1-2-3-5	66	18			C., B. & K. C. R R.
Mendota Coal Co., No. 9	Mendota				6-7-25-34	67	18			C., B. & K. C. R. R.
Missouri Min'g, M'f'g & Merc. Co.	Unionville	450,000	45,000	Missouri	19	66	18	440		C., B. & K. C. R. R.
Moore Coal Co	Unionville		1,500		34	66	18	48		C., B. & K. C. R. R.
Robbins, J. A.	Worthington		4,000		12	65	17	100		C., B. & Q. R. R.
Rogers Coal Co	Mendota	6,000	6,000	Missouri	27	67	18		341	C., B. & K. C. R. R.
Seavey & Triplett	Unionville		2,000		3	65	18	94		C., B. & K. C. R. R.
Shelton, Wm. E. & Sons	Unionville		6,000		34	66	18	80		C., B. & K. C. R. R.
Stevens, Americus	Livonia		5,000		26	67	17	101		C., B. & K. C. R. R.

TABLE 1—Continued.

RALLS COUNTY.

Name of company or person operating.	Location of mine.	Capitalization.	Amount invested in land and plant	Incorporated under laws of	Location of land.			Acres of land.		Shipping facilities.
					Sections.	Township.	Range...	Owned...	Leased...	
Clark Coal Co	Perry		$4,000		26	54	7	240		St. L. & H. R. R.
Dixon, Joseph	Perry				10	53	7	40		St. L. & H. R. R.
Ralls County Coal Co	Perry	$8,000	8,000	Missouri	24–26	54	7		180	St. L. & H. R. R.
Smith, Henry & Son	Perry		200							St. L. & H. R. R.
Tighe Coal & Mining Co	Perry	3,000	3,000		23	54	7		76	St. L. & H. R. R.
RANDOLPH COUNTY.										
Bowder, John	Cairo				8	54	14		40	Wabash R. R.
Bradley, D. T	Moberly	$10,000	$10,000	Missouri	15	53	14	240		Wabash and M., K. & T. R. R.
Burge Bros	Huntsville		100						3	Wabash R. R.
Clark, D. E	Huntsville		1,100					8		Wabash R. R.
Cronan, J. M	Moberly		500		34	54	14		40	Wabash and M., K. & T. R. R.
Demort & Clam	Yates		300		3–4	52	15		40	C. & A. R. R.
Diamond Coal Co	Huntsville		2,000		35	54	15		40	Wabash R. R.
Durham, Daniel	Jacksonville		500							Wabash R. R.
Davidson, D. C	Moberly									Wabash and M., K. & T. R. R.
Esry, Andrew	Moberly								2	Wabash and M., K. & T. R. R.
Eravi, Joseph	Moberly									Wabash and M., K. & T. R. R.
Goett, P. J	Moberly		250						5	Wabash and M., K. & T. R. R.
Jackson & Harris	Clifton Hill		500		3	55	16		4	Wabash R. R.
McKiernan, W. H	Moberly		3,200		28	54	14	80		Wabash and M., K. & T. R. R.
Mitchell, W. E., C. & M. Co	Huntsville		1,500		25	54	15		40	Wabash R. R.
Milburn Bros	Clifton Hill		3,000		3	54	16	35		Wabash R. R.
Morris, G. W. & Son	Huntsville		400		25	54	15		12	Wabash R. R.
Northern Central No. 2	Huntsville	1,075,000		Conn.	36	53	14		5	Wabash R. R.
Nortern Central No. 11	Higbee				5	52	14	100		C. & A. and M., K. & T. R. R.
O'Toole, Joseph	Moberly		2,000		3	54	14	40		Wabash and M., K. & T. R. R.
Pilkington, John	Moberly							20		Wabash and M., K. & T. R. R.
Slaughter, J. M	Higbee		200			53	13			C. & A. and M., K. & T. R. R.
Smith Heirs	Moberly				27–28–34	54	14	1,100		Wabash and M., K. & T. R. R.
Vaughan, W. T	Moberly		1,000		33	54	14	109	180	Wabash and M., K. & T. R. R.
Ward, Henry	Moberly		10,000			54	14	38		Wabash and M., K. & T. R. R.
Williams, L. B	Moberly		2,000						6	Wabash and M., K. & T. R. R.
Williams & Rupp	Moberly		5,000		32	54	14	40		Wabash and M., K. & T. R. R.

TABLE 1—Continued.

RAY COUNTY.

Name of company or person operating.	Location of mine.	Capitalization..	Amount invested in land and plant........	Incorporated under laws of	Location of land.			Acres of land.		Shipping facilities.
					Sections.	Township.	Range...	Owned...	Leased...	
Blair, Hugh	Knoxville	$6,000	$11,000					107		None.
Brockman, J. C. & A. B	Camden		500		23	51	28		40	A., T. & S. F. and Wabash.
Calnen-Blair Coal Co	Richmond	2,400	5,000	Missouri	26	52	28		140	A., T. & S. F. R. R.
Central Coal & Coke Co., No. 50	Fleming	7,000,000		Missouri	29	51	28	920		Wabash R. R.
Clark, Jacob	Hardin		2,300		14	52	26	85		A., T. & S. F. and Wabash R. R.
Collier, J. W	Hardin				19	52	26		40	A., T. & S. F. and Wabash.
Crawford & Wilson Coal Co	Richmond	20,000	20,000	Missouri	36	52	28	170	30	A., T. & S. F. R. R.
Doran, John	Hardin				15	52	26		60	A., T. & S. F. and Wabash.
Fowler Coal & Mining Co	Richmond	7,000	7,000	Missouri	12	51	28		160	A., T. & S. F. R. R.
Gant, J. M	Norborne				13	52	26		100	A., T. & S. F. and Wabash.
Huston, Fred	Hardin		1,000		14	52	26	20		A., T. & S. F. and Wabash.
Hymer, O. P	Richmond		1,000		34	54	27	80		A., T. & S. F. R. R.
Loeven, M. J	Hardin		8,000		15	52	26	154		A., T. & S. F. and Wabash.
Maple Hill Coal Co	Richmond	15,000	3,000	Missouri	15	52	28		500	A., T. & S. F. R. R.
Martin, Hubbell, Osborne, Nos. 7 & 3	Camden	5,000		Missouri					410	A., T. & S. F. and Wabash.
Martin, Hubbell, Osborne, Nos. 10 & 22	Richmond									A., T. & S. F. R. R.
McCorkendale, J. R	Lakeview				11	52	26		220	None.
McDaniel, J. L	Richmond		200			52	27		136	A., T. & S. F. R. R.
Mercantile C. & M. Co	Richmond	15,000	15,000	Missouri	25	52	27		1	A., T. & S. F. R. R.
O'dell, E. R	Richmond				11	52	27		160	A., T. & S. F. R. R.
Ottman & Nelson	Richmond				4	51	27		240	A., T. & S. F. R. R.
Pence & Calnen Coal Co	Richmond	2,000	1,500		1	57	28		130	A., T. & S. F. R. R.
Pickering Coal Co	Richmond	5,000	5,000	Missouri	25–36	52	28	6	318	A., T. & S. F. R. R.
Ray Co. C., B. & Tile Co	Norborne		1,600		13	52	26		35	A., T. & S. F. and Wabash.
Rice, Perry	Richmond		5,000		29	52	27		7	A., T. & S. F. R. R.
Richmond & Camden C. Co	Richmond	200,000	10,000	Missouri				1,570	630	A., T. & S. F. and Wabash.
Ramsey, Robert	Hardin		3,000		14	52	26		40	A., T. & S. F. and Wabash.
Shea, Thos. & Sons	Richmond	8,000	4,000		20	52	27	40		A., T. & S. F. R. R.
Turner & Son	Orrick		950							Wabash R. R.
Thompson, Geo. W	Richmond	6,000	3,200					22		A., T. & S. F. R. R.
Vibbard Coal Co	Vibbard	25,000	13,800	Missouri	27	53	29	145	340	A., T. & S. F. R. R.
Ward, W. O	Richmond	4,000							70	A., T. & S. F. R. R.
Watson, James M	Richmond		4,000		32	52	27	17		A., T. & S. F. R. R.
Woodruff, John	Norborne								20	A., T. & S. F. and Wabash.

TABLE 1—Continued.

Name of company or person operating.	Location of mine.	Capitalization.	Amount invested in land and plant.	Incorporated under laws of	Location of land.			Acres of land.		Shipping facilities.
					Sections.	Township.	Range.	Owned.	Leased.	
SALINE COUNTY.										
Garver, J. N	Sweet Springs								100	Mo. Pac. R. R.
ST. CLAIR COUNTY.										
Cook, James M	Appleton City		$10,000		4	39	28	160		M., K. & T. R. R.
Collins, J. C	Lowry City		2,000		30	39	25		40	K. C., C. & S. and Frisco R. R.
Greathouse, T. L	Osceola				35		26	40	80	K. C., C. & S. and Frisco R. R.
SCHUYLER COUNTY.										
Golston, Ira	Worthington				23	65	16	273		C., B. & Q. R. R.
Hymes, J. W	Coatsville							30		Wabash.
Long, G. B	Coatsville		$1,200		34	67	16	18		Wabash.
Muck & Grindle	Coatsville								40	Wabash.
Watson, Jesse	Coatsville				34	67	16	40		Wabash.
SULLIVAN COUNTY.										
Milan Coal Co	Milan	$10,000	$1,000	Missouri	11	62	20		1,000	C., B. & Q. and Q., O. & K. C.
VERNON COUNTY.										
*Brown, A. S	Moundville		$150			34	32		5	Mo. Pac. R. R.
Carbon Coal Co	Panama	$2,000	5,000	Missouri	4	37	31		80	Mo. Pac. R. R.
Davis, Jas. P	Walker						29			M., K. & T. R. R.
Ewing, W. H	Walker				16	36	30			M., K. & T. R. R.
Flake, J. W	Harwood								160	M., K. & T. R. R.
Jones Coal Co	Panama	2,100	10,000	Missouri	4	37	31		160	Mo. Pac. R. R.
Koch, Herman	Walker		25,000					345		M., K. & T. R. R.
Prewitt, Wm. T	Walker				9	36	30			M., K. & T. R. R.
Palmer, D. L	Schell City				26	37	30	100		M., K. & T. R. R.
Tuttle & Neagle	Walker				8	32	30		207	M., K. & T. R. R.

Table 2—Kind of Mine Opening, When Opened, Depth of Shaft, Thickness of Seam, Plan of Working, Power Used.

Name of company or person operating.	Kind of Mine opening.	When opened.	Depth of shaft.	Thickness of seam.		Plan of working.	Power used for				
				Feet.	Inches		Hoisting.	Machines.	Drilling.	Hauling.	Fan.
						ADAIR COUNTY.					
Arctic Coal Co	Shaft	1908	52	3	2	Room and pillar	Horse			Hand	Steam.
Big Creek Coal Co	Shaft	1905	86	3	8	Room and pillar	Steam	Hand	Hand	Hand	Steam.
Consolidated Stahl C. Co	Slope	1906		3		Long wall		Electric		Electric	
Great Northern Fuel Co., No. 1	Shaft	1903	85	3	10	Room and pillar	Steam			Mule	Steam.
Great Northern Fuel Co., No. 21	Shaft	1904	137	3	10	Room and pillar	Steam			Mule	Steam.
Great Northern Fuel Co., No. 23	Shaft	1904	65	3	10	Room and pillar	Steam			Mule	Steam.
Hazel Creek Coal Co	Slope	1908		4		Room and pillar	Horse		Hand	Hand	
Ivie, J. M. & Sons	Shaft		140	3	8	Room and pillar	Steam				Steam.
Kansas City, Midland C. M. Co	Shaft	1900	150	3	4	Room and pillar	Steam			Mule	Steam.
Lee, John	Slope	1908		3	8	Room and pillar	Horse				
Manufacturer's C & C Co., No 1	Slope	1901		3	8	Room and pillar	Steam	None	Hand	Mule	Steam.
Manufacturer's C. & C. Co., No. 4	Slope	1904		3	9	Room and pillar	Steam	None	Hand	Mule	Steam.
Manufacturer's C. & C. Co., No. 50	Shaft	1903	88	3	6	Room and pillar	Steam	None	Hand	Mule	Steam.
Rombauer Coal Co., No. 2	Shaft	1900	75	3	8	R. and P., L. W	Steam	Electric	Electric	Mule	Steam.
Rombauer Coal Co., No. 3	Shaft	1903	85	3	8	R. and P., L. W	Steam	Electric	Electric	Mule	Steam.
Rombauer Coal Co., No. 4	Shaft	1909	92	3	8	R. and P., L. W	Steam	Electric	Hand	Mule	Steam.
Star Coal Co	Shaft	1908	246	2	6	R. and P., L. W	Electric	None	Hand	Mule	Electric.
						AUDRAIN COUNTY.					
Audrain Coal Co	Shaft	1903	80	2	4	Long wall	Steam			Mule	Steam.
Davidson, Henry W	Shaft	1908	45	2	6	Long wall	Horse			Hand	
Lowder, Peterson Coal Co	Shaft	1890	100	2	4	Long wall	Steam	Electric	None	Mule	Steam.
Martinsburg C. & M. Co	Shaft	1903	140	2	8	Long wall	Steam			Mule	Steam.
Self & Williams	Shaft	1901	40	2	6	Long wall	Horse			Hand	Steam.
Standard C. & M. Co	Shaft	1906	60	2	10	Room and pillar	Horse			Horse	
						BARTON COUNTY.					
Betz, Jocob	Slope	1902		2	4	Room and pillar					
Cackley, R. E	Drift	1901		2	5	Room and pillar				Hand	
Clark Bros				1							
Creekmore, W. P	Slope	1906		2	6	Room and pillar	Hand				
Correlli Coal Co	Shaft	1905	40	2	8	Room and pillar	Steam	None	Hand	Mule	

TABLE 2—Continued.

BARTON COUNTY—Continued.

Name of company or person operating.	Kind of mine opening.	When opened.	Depth of shaft.	Thickness of seam.		Plan of working.	Power used for				
				Feet.	Inches		Hoisting.	Machines.	Drilling.	Hauling.	Fan.
Davis Coal Co	Drift	1906		2	8	Room and pillar	Horse	None	None	Mule	
Freedling, W H											
Gelvet, W. H	Strip pit	1909		1	2						
Lasley, W. B	Strip pit			3							
Lavery, W. J	Slope	1908		2	4	Room and pillar	Horse	None	None	Hand	
Lawrence, Frank	Drift			1	8	Room and pillar				Hand	
Mulkins, T. E	Slope	1908		2	4	Room and pillar					
Orahood, A. J	Strip pit			1							
Orahood, Wm	Strip pit										
Patterson, W. W. Coal Co		1907		2	8						
Peck & Brummett	Drift	1909		1		Room and pillar	Hand				
Pittsburg Coal Co	Shaft	1904	32	2	8	Room and pillar	Steam			Mule	
Pittsburg & Midway Coal Co	Shaft	1908	45	3	2	Room and pillar	Steam			Mule	Steam.
Pullen & Sons Coal Co	Shaft		40	2	6	Room and pillar	Steam			Mule	Steam.
Stephenson, J. J. Coal Co	Strip pit			3							
Stone, C. T	Drift	1903		2	4	Long wall					
Taylor, R. J	Slope	1906		2	6	Room and pillar	Horse			Hand	
Wear Coal Co	Shaft	1904	38	2	8	Room and pillar	Steam	None	Hand	Mule	Steam.
Western C. & M. Co., No. 9	Slope	1898		3		Room and pillar	Steam	None	Hand	Mule	Steam.
Western C. & M. Co., No. 17	Shaft	1908	75	3		Room and pillar	Steam	None	Hand	Mule	Steam.
						BATES COUNTY.					
Amsterdam Coal Co	Shaft	1904	100	2	4	Room and pillar	Steam			Hand	
Atlas Coal M. & M. Co	Shaft	1908	256	4	6	Room and pillar	Steam	None	Hand	Mule	Steam.
Ayer, U	Strip pit										
Baker, Joseph	Shaft	1908	20	2	10	Room and pillar	Horse	None		Hand	
Carr Coal M. & M. Co	Shaft	1905	40	3	8	Room and pillar	Steam			Mule	Steam.
Decker, H. W	Slope	1885		3	4	Room and pillar	Steam		Hand	Hand	
Diller, Sam	Slope	1909		4	8	Room and pillar		Hand	Hand	Hand	
Dunkerly Coal Co	Shaft	1904	40	3		Room and pillar	Horse		Hand		
Fleming Coal Co	Strip pit	1904		4						Mule	
Harris, J. A	Strip pit	1909		2	8						
Hair, Miller & Bradford	Slope	1909		3		Room and pillar	Steam	Horse	Hand	Hand	
Henley, R. J	Strip pit	1906		2	9						
Heckadon, P. L	Slope			3	6					Mule	
Holland Coal Co	Shaft	1904	36	3		Room and pillar	Steam			Mule	
Johnson, King	Slope	1906		3		Room and pillar	Horse		Hand	Hand	
McClendon, Harry	Shaft	1909	18	2	6	Long wall	Horse				

TABLE 2—Continued.

BATES COUNTY—Continued.

Name of company or person operating.	Kind of mine opening.	When opened..	Depth of shaft..	Thickness of seam. Feet..	Thickness of seam. Inches	Plan of working.	Power used for Hoisting.	Power used for Machines.	Power used for Drilling.	Power used for Hauling.	Power used for Fan.
McConnel, W. A. & Sons	Shaft	1906	41	3	4	Room and pillar	Horse			Mule	
Metzler & Shelton	Strip pit			4							
Pearson Bros	Strip pit										
Peeler, D. D	Strip pit										
Ritchie, H. C	Slope	1907		5		Room and pillar	Steam				
Scott, Thos. B	Strip pit			3	6						
Smalley, J. M	Slope	1909		2	6	Room and pillar			Hand	Hand	
Sprague, Coal Co	Shaft	1906		3		Room and pillar	Horse			Mule	
Tarver, E. R	Drift										
Tatley, J. V	Shaft	1908	40	2	10	Room and pillar	Horse				
Wear, Emmet	Shaft	1908	36	4	6	Room and pillar	Steam			Mule	

BOONE COUNTY.

Name of company or person operating.	Kind of mine opening.	When opened..	Depth of shaft..	Thickness of seam. Feet..	Thickness of seam. Inches	Plan of working.	Power used for Hoisting.	Power used for Machines.	Power used for Drilling.	Power used for Hauling.	Power used for Fan.
Davis & Watson	Shaft	1906	110	3	2	Room and pillar	Horse		Hand	Mule	Steam.
Davis, Isaac R	Shaft	1906	30	3		Room and pillar	Horse		Hand	Mule	
McGee, Lonnie	Shaft		35	2	8	Long wall	Horse	Steam			
Prather, W. R	Shaft	1890	53	3	6	Room and pillar	Horse				
Shock, R. L	Shaft	1905	28	3	8	Room and pillar	Horse				
Sutton, W. C	Slope	1905		3	6	Room and pillar				Hand	

CALLAWAY COUNTY.

Name of company or person operating.	Kind of mine opening.	When opened..	Depth of shaft..	Thickness of seam. Feet..	Thickness of seam. Inches	Plan of working.	Power used for Hoisting.	Power used for Machines.	Power used for Drilling.	Power used for Hauling.	Power used for Fan.
Bell, Eli	Shaft	1905	35	2	6	Long wall	Horse			Hand	
Clark, Geo	Shaft	1907	40	2	3	Room and pillar	Horse				
Fulton Coal Co	Shaft	1907	87	3		Long wall	Steam	Steam			Steam.
Fulton Fire Brick Co	Shaft	1904	100	2	6	Long wall	Steam				Steam.
Harris & Trigg	Shaft	1909	37	2	6	Long wall	Horse				
Morsinkhoff, John	Drift	1909		2	6	Long wall					
Nickolson, C. M	Shaft	1906	50	3	4	Room and pillar	Horse			Hand	
Reed, J. W	Shaft	1909	36	2	6	Long wall	Horse				
Simmons, J. W	Drift	1906		2	2	Long wall				Mule	
Skelley, E	Shaft		30	3		Pillar and room	Horse				
Smith, David	Shaft		60	2	6	Long wall	Steam				
Sulzer, J. W	Shaft	1909	60	2	6	Long wall	Horse		Hand		Steam.

TABLE 2—Continued.

Name of company or person operating.	Kind of mine opening.	When opened.	Depth of shaft.	Thickness of seam.		Plan of working.	Power used for				
				Feet.	Inches		Hoisting.	Machines.	Drilling.	Hauling.	Fan.
CALDWELL COUNTY.											
Caldwell Coal Co	Shaft	1885	500	1	8	Long wall	Steam	None		Mule	Steam.
CARROLL COUNTY.											
Cowan, R. M	Drift	1909		2	2	Long wall				Hand	
Kenyon, J. A	Shaft	1907	14	2		Long wall	Horse			Hand	
O'dell, James	Shaft		47	1	6	Long wall	Horse				
CASS COUNTY.											
Creighton Tile & Coal Co	Shaft	1898	163	2	9	Room and pillar	Steam	Steam		Mule	Steam.
CHARITON COUNTY.											
Collett, Lizzie M	Strip pit			1	8						
Dooley, J. A	Drift	1900		1	8	Room and pillar					
Kahler, W. J	Strip pit			1	6						
Kingsley, Bros	Slope	1909		2		Room and pillar					
Rothville C. & M'g. Co	Shaft	1908	80	1	6	Room and pillar	Horse				
Strickland, J. C.	Drift	1909		1	6	Long wall					
Watson, S. E.	Drift	1909		1	10	Room and pillar					
CLAY COUNTY.											
Missouri City Coal Co	Shaft	1893	166	1	8	Long wall	Steam	None	None	Mule	Steam.
COLE COUNTY.											
Bandelier, S. & A	Shaft	1908	60	4		Room and pillar	Horse				

TABLE 2—Continued.

Name of company or person operating.	Kind of mine opening.	When opened.	Depth of shaft.	Thickness of seam. Feet.	Thickness of seam. Inches	Plan of working.	Power used for Hoisting.	Power used for Machines.	Power used for Drilling.	Power used for Hauling.	Power used for Fan.
DADE COUNTY.											
Hickman, O	Shaft		32	2	6	Room and pillar	Mule			Hand	
Stout, W. A	Shaft	1909	20	2	6	Room and pillar	Mule				
Windes, W. H	Shaft	1909	44	2	10	Room and pillar	Mule				
GRUNDY COUNTY.											
Trenton Mining Co	Shaft	1905	225	1	6	Long wall	Electric	Hand	Hand	Mule	Electric.
HENRY COUNTY.											
Anaconda Coal Co	Shaft	1907		3		Room and pillar	Horse	Hand	Hand	Hand	
Bowen, Coal Co	Shaft	1904	95	5	6	Room and pillar	Steam			Mule	Steam.
Brush Coal Co	Shaft	1907	35	2	6	Room and pillar	Horse		Hand	Mule	
Dickey, W. S	Shaft	1908	40	2	6	Room and pillar	Steam			Mule	Steam.
England, James C. Co	Shaft	1903	60	2	9	Room and pillar	Horse			Hand	
Hughes, W. E	Shaft	1870	18	4	8	Room and pillar	Horse				
Hurst Coal Co	Shaft	1908	54	3		Room and pillar	Steam			Mule	Steam.
Lane, M. E	Shaft		30	2	6	R. and P., L. W	Horse				
Lewis Coal Co	Drift	1888	40	2	8	Long wall	Steam			Mule	
Parks, A. F	Slope	1905		3	6	Long wall				Mule	
Pharis & Rivers	Shaft	1905	30	1	10	Room and pillar	Horse		Hand	Hand	
Reese, Wm. D	Drift	1908		2		Long wall	Hand			Hand	
Rusk, W. H	Shaft	1903	30	2	9	Room and pillar	Horse		Hand	Hand	
Standard Coal Co	Shaft	1908	27	2	10	Room and pillar	Horse		Hand	Hand	
HOWARD COUNTY.											
Collins, W. H	Slope	1902		2		Long wall		Hand		Hand	
Pitney, Alexander	Slope	1908		3		Room and pillar					
Pitney, O. S	Slope	1906		3	6	Room and pillar					
Rohr, O. B	Slope	1909		1	6	Long wall				Hand	

TABLE 2—Continued.

JOHNSON COUNTY.

Name of company or person operating.	Kind of mine opening.	When opened.	Depth of shaft.	Thickness of seam. Feet.	Thickness of seam. Inches	Plan of working.	Power used for Hoisting.	Power used for Machines.	Power used for Drilling.	Power used for Hauling.	Power used for Fan.
Burns, M. F	Strip pit			3							
Bullock, D. A	Drift	1908		1	6	Room and pillar				Hand	
Bullock, P. H	Strip pit			1	10						
Jacobs, W. D	Shaft	1909		1	6	Room and pillar	Hand		Hand	Hand	
Meily, M. B	Shaft	1908		1	8	Room and pillar	Hand			Hand	
Millard, Frank	Slope	1908		2	6	Room and pillar	Horse				
McGrath, John	Strip pit	1908		2							
Sutherland Coal Co	Shaft	1908	180	1	10	Long wall	Steam	Horse			Steam.

LAFAYETTE COUNTY.

Name of company or person operating.	Kind of mine opening.	When opened.	Depth of shaft.	Thickness of seam. Feet.	Thickness of seam. Inches	Plan of working.	Power used for Hoisting.	Power used for Machines.	Power used for Drilling.	Power used for Hauling.	Power used for Fan.
Aull, Edw. Coal Co	Drift			1	8	Long wall	Steam			Mule	Steam.
Arnschild, John											
Bell & Greer	Drift	1884		1	8	Long wall					
Bonanza Coal Co	Shaft	1890	72	1	8	Long wall	Horse		Hand	Mule	Steam.
Boedeker Coal Co	Slope	1903		1	7	Long wall	Horse		Hand	Hand	Steam.
Canterberry & Griffith	Slope	1906		1	5		Horse				Steam.
Clay, Tom	Drift			1	6	Room and pillar					
Cary, B. F	Shaft	1897	130	1	8	Long wall	Steam				
Corder Coal Co	Shaft	1908	38	1	6	Long wall	Horse				
Diamond Coal Co., "S.F."	Shaft	1893	42	1	8	Long wall	Horse		Hand	Mule	Steam.
Diamond Coal Co., "Wilson."	Shaft	1902	56	1	8	Long wall	Steam		Hand	Mule	Steam.
Dover Coal Co	Drift	1889		2		Long wall				Mule	Steam.
Duncan, Harvey	Slope	1903		1	10	Long wall				Hand	
Emison, S. G											
Farmer's Coal Co., No. 1	Shaft	1888	80	1	7	Long wall	Steam	Electric	Hand	Electric	Steam.
Farmer's Coal Co., No. 3	Shaft	1890	50	1	7	Long wall	Steam	Electric	Hand	Electric	Steam.
Farmer's Coal Co., No. 6	Shaft	1894	25	1	7	Long wall	Steam	Electric	Hand	Electric	Steam.
Farmer's Coal Co., No. 7	Drift	1896		1	7	Long wall					
Fallman, Edw	Drift			1	7	Long wall					
Gann & Bledsoe	Drift	1904		1	2	Long wall					
Hohenwald Bros	Shaft	1898		1	10	Long wall	Horse				
Independence C. M'g. Co	Shaft		47	1	6	Long wall	Steam		Hand	Mule	Steam.
Kratz & Son	Shaft	1901	16	1	5	Long wall	Horse				
Labor Exchange, No. 305	Shaft	1905	96	1	6	Long wall	Steam	Electric	Hand	Mule	Steam.
Lanning-Harris C. & C. Co	Drift	1890		1	6	Long wall	Steam	Electric	None	Mule	Steam.
Martens, Jacob	Drift	1905		1	6	Room and pillar					
McGrew Coal Co	Drift	1885		1	10	Long wall		Electric	Hand	Mule	Electric.

TABLE 2—Continued.

LAFAYETTE COUNTY—Continued.

Name of company or person operating.	Kind of mine opening.	When opened.	Depth of shaft.	Thickness of seam.		Plan of working.	Power used for				
				Feet.	Inches		Hoisting.	Machines.	Drilling.	Hauling.	Fan.
Painter, C. S	Slope	1906		1	8	Long wall					
Plattenburg Coal Co	Drift	1902		2		Long wall				Mule	
Rost, Wm. C	Slope	1904		2		Long wall	Hand				
Sebastian, R	Shaft	1886	72	1	4	Long wall	Steam			Mule	Steam.
Sipe, C. C. & Son	Shaft	1905	26	1	4	Long wall	Horse			Hand	
Stolen, Anton	Shaft	1905	42	2	2	Room and pillar	Horse				
Stoll Bros	Slope	1906		1	6	Long wall	Horse				
Summers, M. W	Drift	1874		2	2	Long wall				Hand	
Tyler, J. W	Shaft	1903		1	6	Long wall					
Van Guilder, E. M	Drift			1	10	Long wall				Mule	
Waverly Brick & Coal Co	Shaft	1909		4	4	Room and pillar	Steam			Mule	Steam.
Western C. & M. Co., "South"	Shaft	1906	180	1	8	Long wall	Steam	Electric	None	Mule	Steam.
Western C. & M. Co., "Summit"	Shaft	1902	160	1	8	Long wall	Steam	Electric	None	Mule	Steam.
Western C. & M. Co., "Midway"	Shaft	1900	140	1	8	Long wall	Steam	Electric	None	Mule	Steam.
Western C. & M. Co., "Valley"	Shaft	1900	90	1	8	Long wall	Steam	Electric	None	Mule	Steam.
Wegener, J. C	Shaft	1904	35	1	4	Long wall	Horse			Hand	
Whitley, Scott	Drift	1900		1	6	Long wall					
Wright, Jas	Drift			1	4	Long wall				Hand	
Wright, Sam'l. & Frank	Shaft	1901	25	1	6	Long wall	Horse			Hand	

LINN COUNTY.

Name of company or person operating.	Kind of mine opening.	When opened.	Depth of shaft.	Feet.	Inches	Plan of working.	Hoisting.	Machines.	Drilling.	Hauling.	Fan.
Barr, Chas	Shaft	1900	135	2	2	Long wall	Horse				
Bucklin Coal Co	Shaft	1907	230	2	8	Long wall	Steam		Hand.		Steam.
Crandall, W. E	Shaft		140	2	2	Long wall	Horse				
Landreth Coal Co	Shaft	1891	130	2	4	Long wall	Steam				Steam.
Marceline C. & M. Co. No. 1	Shaft	1889	185	2	3	Long wall	Steam			Mule	Steam.
Marceline C. & M. Co. No. 2	Shaft	1902	210	3	1	Long wall	Steam			Mule	Steam.
Sheehan, J. E	Shaft	1897	150	2	2	Long wall	Horse				
Wine, G. C	Shaft		150	2	4	Long wall	Horse				

LIVINGSTON COUNTY.

Name of company or person operating.	Kind of mine opening.	When opened.	Depth of shaft.	Feet.	Inches	Plan of working.	Hoisting.	Machines.	Drilling.	Hauling.	Fan.
Cox, Ira B	Shaft	1906	85	1	8	Room and pillar	Horse				
Fulwood, Wm	Shaft	1909	31	1		Long wall	Horse			Hand	

TABLE 2—Continued.

MACON COUNTY.

Name of company or person operating.	Kind of mine opening.	When opened.	Depth of shaft.	Thickness of seam.		Plan of working.	Power used for				
				Feet.	Inches		Hoisting.	Machines.	Drilling.	Hauling.	Fan.
Badgerow, David	Slope	1904	....	4	6	Room and pillar	Horse	....	Hand	Mule	
Central C. & C. Co. No. 25	Slope	1906	....	4	2	Room and pillar	Steam	....	....	Mule	Steam.
Central C & C. Co. No. 28	Shaft	1907	79	3	10	Room and pillar	Steam	....	....	Mule	Steam.
Central C. & C. Co. No. 61	Shaft	1898	124	4	2	Room and pillar	Steam	....	....	Mule	Steam.
Central C. & C. Co. No. 66	Shaft	1898	57	4	2	Room and pillar	Steam	....	....	Mule	Steam.
Dennis, J. H	Shaft	1898	60	2	....	Long wall	Horse	....	Hand	Hand	
Hurd & Hurd	Shaft	1903	98	3	....	Long wall	Horse	....	....	Hand	
Isaacson & Underwood	Slope	1909	....	4	6	Room and pillar	....	....	Hand	Hand	
James Bros	Shaft	1894	54	4	....	Room and pillar	Horse	....	....	Mule	
Jones, John H	Shaft		107	4	....	Room and pillar	Horse	....	....	Hand	
Lehman, H. A	Slope	1908	....	3	6	Room and pillar	....	....	....	Mule	
Lunsford, H. W	Slope	1908	....	1	10	Room and pillar	Hand	....	....	Hand	
Northwestern C. & M. Co. No. 8	Shaft	1900	140	4	6	Room and pillar	Steam	....	....	Mule	Steam.
Northwestern C. & M. Co. No. 9	Shaft	1905	101	4	6	Room and pillar	Steam	....	....	Mule	Steam.
Parry, J. P	Slope	1904	....	4	8	Room and pillar	Mule	....	....	Mule	
MONITEAU COUNTY.											
Monarch C. & M. Co	Shaft	1845	100	....	....	....	Steam	....	....	....	
MONROE COUNTY.											
Gilbert, J. B	Drift	1908	....	1	6	Long wall	....	....	....	Hand	
MONTGOMERY COUNTY.											
Biddleman Wm	Slope	1905	....	2	6	Long wall	....	....	....	....	
Hammitt, C. E	Shaft	1907	25	2	6	Long wall	Horse	....	....	....	
Noel, Buford	Slope	1905	....	2	6	Long wall	....	....	....	....	
Whitehead & Sons	Drift	1907	....	2	6	Long wall	Hand	....	....	....	

TABLE 2—Continued.

Name of company or person operating.	Kind of mine opening.	When opened.	Depth of shaft.	Thickness of seam.		Plan of working.	Power used for				
				Feet.	Inches		Hoisting.	Machines.	Drilling.	Hauling.	Fan.
MORGAN COUNTY.											
Ouachita C. & C. Products Co.	Shaft	1907	112			Room and pillar	Steam		Hand	Hand	
PLATTE COUNTY.											
Home Riverside Coal Co.	Shaft	1870	700	1	10	Long wall	Steam		Hand	Mule	Steam.
PUTNAM COUNTY.											
Baugher, A. W	Drift	1903		3		Room and pillar					
Hawkins, John	Slope	1908		3		Room and pillar					
Humphreys, Richard	Drift	1907		3		Room and pillar					
Jones, Geo. F	Drift	1900		3	4	Room and pillar				Mule	
Means & De Garmo	Shaft	1907	84	2	6	Room and pillar	Steam			Hand	Steam.
Mendota Coal Co. No. 2	Shaft	1892	67	2	10	R. & P. and L. W.	Steam	Steam	Hand	Mule	Steam.
Mendota Coal Co. No. 7	Drift	1909		2	10	R. & P. and L. W.	Mule			Mule	
Mendota Coal Co. No. 9	Drift	1901		2	10	R. & P. and L. W.	Mule		Hand	Mule	
Mo. M'g., Mfg. & Merc. Co	Slope	1901		2	8	Room and pillar	Steam			Mule	
Moore Coal Co	Drift	1907		2	8	Room and pillar					
Robbins, J. A	Slope	1904		3	8	Room and pillar	Horse			Hand	
Rogers Coal Co	Drift	1890		2	10	R. & P. and L. W.	Mule		Hand	Mule	
Seavey & Triplett	Slope	1909		3	2	Room and pillar	Horse			Hand	
Shelton, W. E., & Sons	Shaft	1905	20	3		Room and pillar	Horse			Mule	
Stevens, Americus	Drift	1909		3	4	Room and pillar				Hand	
RALLS COUNTY.											
Clark Coal Co	Shaft	1898	60	2	2	Long wall	Horse			Mule	Gasoline.
Dixon, Joseph	Slope	1908		2	4	Room and pillar					
Ralls Co. Coal Co	Shaft	1901	50	2	3	Long wall	Horse				Gasoline.
Smith, Henry, & Sons	Drift	1909		2	6	Long wall					
Tighe Coal & M'g. Co	Shaft	1908	62	2	2	Long wall	Horse			Mule	

TABLE 2—Continued.

RANDOLPH COUNTY.

Name of company or person operating.	Kind of mine opening.	When opened.	Depth of shaft.	Thickness of seam.		Plan of working.	Power used for				
				Feet.	Inches		Hoisting.	Machines.	Drilling.	Hauling.	Fan.
Bowden, John	Drift	1906		4		Room and pillar					
Bradley, D. T	Shaft	1909	55	4		Room and pillar	Horse		Hand	Hand	
Burge Bros	Slope	1907		3	10	Room and pillar				Mule	
Clark, D. E	Slope			4		Room and pillar	Horse				
Cronan, J. M	Drift	1907		4		Room and pillar	Mule		Hand	Mule	
Demart & Clam	Shaft	1908	20	4		Room and pillar	Steam				
Diamond Coal Co	Slope	1909		4		Room and pillar			Hand	Mule	
Durham, Daniel	Drift	1908		4		Room and pillar	Hand				
Davidson, D. C	Slope	1909		4	6	Room and pillar		Hand	Hand	Hand	
Esry, Andrew	Slope	1909		4	8	Room and pillar					
Eravi, Joseph	Slope	1904		4		Room and pillar				Mule	
Goett, P. J	Slope	1908		4		Room and pillar	Mule		Hand	Mule	
Jackson & Harris	Shaft	1903	50	4	8	Room and pillar	Horse		Hand	Hand	
McKiernan, W. H	Drift	1909		4	3	Room and pillar				Hand	
Mitchell, W. E., C. & M. Co	Drift	1908		3	9	Room and pillar	Mule		Hand	Mule	
Milburn Bros	Shaft	1905	57	4	6	Room and pillar	Horse	Hand	Hand	Hand	
Morris, G. W., & Son	Slope	1904		4		Room and pillar	Mule	Hand		Mule	
Northern Central C. Co. No. 2	Shaft	1904	76	4		Room and pillar	Steam	Electric		E. & M	Steam.
Northern Central C. Co. No. 11	Shaft	1905	176	3	6	Room and pillar	Steam	Electric		Mule	Steam.
O'Toole, Joseph	Drift	1907		4		Room and pillar	Mule				
Pilkington, John	Slope	1908		4	6	Room and pillar				Mule	
Slaughter, J. M	Shaft	1908	66	3	8	Room and pillar	Horse				
Smith Heirs											
Vaughan, W. T	Drift	1906		4	6	Room and pillar				Mule	
Ward, Henry	Shaft	1909	58	3	8	Room and pillar					
Williams, L. B	Slope	1904		4		Room and pillar				Mule	
Williams & Rupp	Slope	1909		4		Room and pillar	Steam			Mule	

RAY COUNTY.

Name of company or person operating.	Kind of mine opening.	When opened.	Depth of shaft.	Feet.	Inches	Plan of working.	Hoisting.	Machines.	Drilling.	Hauling.	Fan.
Blair, Hugh	Shaft	1897	190	2	2	Long wall	Horse			Hand	Gasoline.
Brockman, J. C. & A. B	Shaft	1902	30	1	6	Long wall	Horse				
Calnen-Blair Coal Co	Shaft	1903	120	2		Long wall	Steam			Mule	Steam.
Central C. & C. Co. Mine No. 50	Shaft	1902	72	1	10	Long wall	Steam	Electric		Electric	Steam.
Clark, Jacob	Shaft	1891	40	2	2	Long wall	Horse				
Collier, J. W	Slope	1898		1	8	Long wall	Hand				
Crawford-Wilson Coal Co	Shaft	1879	108	2		Long wall	Steam		Hand	Mule	Steam.
Doran, John	Drift	1883		1	10	Long wall				Hand	
Fowler C. & Mng. Co	Shaft	1900	72	2		Long wall	Steam			Mule	Steam.

TABLE 2—Continued,

RAY COUNTY—Continued.

Name of company or person operating.	Kind of mine opening.	When opened..	Depth of shaft.	Thickness of seam.		Plan of working.	Power used for				
				Feet..	Inches		Hoisting.	Machines.	Drilling.	Hauling.	Fan.
Gant, J. M	Drift	1889	....	1	....	Long wall					
Huston, Fred	Drift	....	....	2	....	Long wall	Hand			Hand	
Hymer, O. P	Shaft	1902	145	1	8	Long wall	Steam			Hand	Steam.
Loeven, M. J	Drift	1901	....	1	10	Long wall					
Maple Hill Coal Co	Shaft	1904	90	1	10	Long wall	Steam		Hand	Mule	Steam.
Martin-Hubbell-Osborne C. Co.:											
Mine No. 3	Shaft	1895	50	2	2	Long wall	Steam	Electric		Mule	Steam.
Mine No. 7	Shaft	1907	90	2	2	Long wall	Steam	Electric		Mule	Steam.
Mine No. 10	Shaft	1890	115	2	2	Long wall	Steam	Electric		Mule	Steam.
Mine No. 22	Shaft	1908	85	2	2	Long wall	Steam	Electric		Mule	Steam.
McCorkendale, J. R	Drift	1884	....	1	6	Long wall				Hand	
McDaniel, J. L	Drift	1907	....	2	2	Long wall				Hand	
Mercantile C. & M. Co	Shaft	1901	193	2	....	Long wall	Steam				Steam.
O'dell, E. R	Shaft	1907	32	1	8	Long wall	Horse			Hand	
Ottman & Nelson	Shaft	1903	65	2	....	Long wall	Horse				
Pence & Calnen Coal Co	Shaft	1894	85	1	10	Long wall	Steam			Mule	Steam.
Pickering Coal Co. No. 9	Shaft	1877	100	2	....	Long wall	Steam			Mule	Steam.
Pickering Coal Co. No. 11	Shaft	1889	107	2	....	Long wall	Steam			Mule	Steam.
Ray Co. C., B. & T. Co	Slope	1890	....	1	5	Long wall					
Rice, Perry	Shaft	....	100	2	....	Long wall	Horse				
Richmond & Camden Coal Co	Shaft	....	85	1	10	Long wall	Steam			Mule	Steam.
Ramsey, Robert	Drift	1905	....	1	8	Long wall				Hand	
Shea, Thos., & Sons	Shaft	....	50	2	....	Long wall	Horse			Hand	
Turner & Son	Shaft	1895	65	2	....	Room and pillar	Horse			Mule	
Thompson, Geo. W	Shaft	1907	84	2	4	Long wall	Horse			Hand	
Vibbard Coal Co	Shaft	1906	400	2	2	Long wall					
Ward, W. O	Shaft	1902	85	2	....	Long wall	Horse			Mule	
Watson, Jas. N	Shaft	1898	85	2	....	Long wall	Horse				
Woodruff, John	Drift	1909	....	1	10	Long wall				Hand	

SALINE COUNTY.

Name of company or person operating.	Kind of mine opening.	When opened..	Depth of shaft.	Feet..	Inches	Plan of working.	Hoisting.	Machines.	Drilling.	Hauling.	Fan.
Garver, J. N	Shaft	1906	34	2	....	Room and pillar	Horse				

ST. CLAIR COUNTY.

Name of company or person operating.	Kind of mine opening.	When opened.	Depth of shaft.	Thickness of seam.		Plan of working.	Power used for				
				Feet.	Inches		Hoisting.	Machines.	Drilling.	Hauling.	Fan.
Cook, Jas. M	Strip pit	1905		2							
Collins, J. C.	Slope	1909		1	6	Pillar and room				Hand	
Greathouse, T. L.	Slope	1908		2		Pillar and room					

SCHUYLER COUNTY.

Name of company or person operating.	Kind of mine opening.	When opened.	Depth of shaft.	Feet.	Inches	Plan of working.	Hoisting.	Machines.	Drilling.	Hauling.	Fan.
Golston, Ira	Shaft	1880	65	3	6	Room and pillar	Horse		Hand	Hand	
Hymes, J. W	Drift	1903		3	8	Room and pillar					
Long, G. B.	Drift	1908		3	8	Room and pillar				Hand	
Mock & Grindle	Drift	1895		3	8	Room and pillar				Mule	
Watson, Jesse	Slope	1902		3	8	Room and pillar					

SULLIVAN COUNTY.

Name of company or person operating.	Kind of mine opening.	When opened.	Depth of shaft.	Feet.	Inches	Plan of working.	Hoisting.	Machines.	Drilling.	Hauling.	Fan.
Milan Coal Co	Shaft	1905	225	3		R. & P. and L. W.	Steam		Hand	Mule	Steam.

VERNON COUNTY.

Name of company or person operating.	Kind of mine opening.	When opened.	Depth of shaft.	Feet.	Inches	Plan of working.	Hoisting.	Machines.	Drilling.	Hauling.	Fan.
Brown, A. S	Shaft	1906	24	2	4	Room and pillar	Horse				
Carbon Coal Co	Shaft	1906	36	4	6	Room and pillar	Steam	Steam	Steam	Mule	
Davis, Jas. P	Strip pit										
Ewing, W. H	Strip pit	1905		1	2						
Flake, J. W	Strip pit			2							
Jones Coal Co	Shaft	1907	34	4	6	Room and pillar	Steam	Steam	Steam	Mule	Steam.
Koch, Herman	Strip pit			1							
Prewitt, Wm. T	Strip pit			1	2						
Palmer, D. L.											
Tuttle & Neagle	Strip pit	1909		2							

Table 3—Ventilation, Boilers, Safety Catches, Signal System, Inspection, No. of Air Shafts, New Mines Opened, Old Mines Abandoned.

ADAIR COUNTY.

Name of company or person operating.	How ventilated.	Name of fan.	No. boilers	Date of last inspection.	Safety catches used.	Signal system.	Daily inspection.	Inspection of hoisting equipment.	No. air shafts	No splits	No. new mines opened	No. old mines abandoned
Arctic Coal Co	4 ft. fan		1	June 1909	No	Yes	No	Yes	1			
Big Creek Coal Co	4½ ft. fan		2	Dec. 1909	Yes	Yes	Yes	Yes	1		1	
Consolidated Stahl C. Co	Furnace		2						2			
Great Northern Fuel Co., No. 1	14 ft. fan	Eagle	1	Dec. 1909	Yes	Yes	Yes	Yes	1			
Great Northern Fuel Co., No. 21	14 ft. fan	Ottumwa	1	Dec. 1909	Yes	Yes	Yes	Yes	1			
Great Northern Fuel Co., No. 23	14 ft. fan	Eagle	1	Dec. 1909	Yes	Yes	Yes	Yes	1			
Hazel Creek Coal Co	Natural		0		No	No	Yes		1			
Ivie, J. M. & Sons	12 ft. fan	Eagle	1	Aug. 1909	Yes	Yes	Yes	Yes				
Kansas City Midland C. M. Co	12 ft. fan		4	Dec. 1909	Yes	Yes	Yes	Yes	1		1	
Lee, John	Furnace						Yes		1			
Manufacturer's C. & C. Co., No. 1	12 ft. fan	Sterling	1	Jan. 1910	Yes	Yes	Yes	Yes	2			
Manufacturer's C. & C. Co., No. 4	12 ft. fan	Ottumwa	2	Dec. 1909	Yes	Yes	Yes	Yes	1			
Manufacturer's C. & C. Co., No. 50	14 ft. fan	Ottumwa	2	Jan. 1910	Yes	Yes	Yes	Yes	2			
Rombauer Coal Co., No. 2	12 ft. fan		2	Jan. 1910	Yes	Yes	Yes	Yes	1			
Rombaur Coal Co., No. 3	12 ft. fan		2	Jan. 1910	Yes	Yes	Yes	Yes	1			
Rombauer Coal Co., No. 4	14 ft. fan		2	Jan. 1910	Yes	Yes	Yes	Yes	1			
Star Coal Co	12 ft. fan	Eagle			Yes	Yes	Yes	Yes	1		1	

AUDRAIN COUNTY.

Name of company or person operating.	How ventilated.	Name of fan.	No. boilers	Date of last inspection.	Safety catches used.	Signal system.	Daily inspection.	Inspection of hoisting equipment.	No. air shafts	No splits	No. new mines opened	No. old mines abandoned
Audrain Coal Co	10 ft. fan	Crawford & McCrimson	1	Jan. 1910	Yes	Yes	Yes	Yes	1			
Davidson, Henry W	Natural								1			
Lowder, Peterson Coal Co	7 ft. fan		2	Feby. 1910	Yes	Yes	Yes	Yes	1			
Martinsburg C. & M. Co	12 ft. fan		1		Yes	Yes	Yes	Yes	1			
Self & Williams	8 ft. fan				No	No	Yes	Yes	1			
Standard C. & M. Co	Natural				Yes	Yes	Yes	Yes	1			

BARTON COUNTY.

Name of company or person operating.	How ventilated.	Name of fan.	No. boilers	Date of last inspection.	Safety catches used.	Signal system.	Daily inspection.	Inspection of hoisting equipment.	No. air shafts	No splits	No. new mines opened	No. old mines abandoned
Betz, Jacob	Natural								1			
Cackley, R. E	Natural								1			

TABLE 3—Continued.

BARTON COUNTY—Continued.

Name of company or person operating.	How ventilated.	Name of fan.	No. boilers	Date of last inspection.	Safety catches used.	Signal system.	Daily inspection.	Inspection of hoisting equipment.	No. air shafts	No. splits	No. new mines opened	No. old mines abandoned
Clark Bros												
Creekmore, W. P	Natural				No	No	No	No	1			
Correlli Coal Co	Furnace		1	Dec. 1909	No	Yes	Yes	Yes	1			
Davis Coal Co	Natural					No	No					
Freedling, W. H					No	No	No	No				
Geivet, W. H												
Lasley, W. B												
Lavery, W. J	Natural								2			
Lawrence, Frank	Natural											
Mulkins, T. E	Natural									2		1
Orahood, A. J												
Orahood, Wm												
Patterson, W. W. Coal Co												
Peck & Brummett	Natural				No	No	No	No	2			
Pittsburg Coal Co	Furnace		1		No				1	1		
Pittsburg & Midway Coal Co	12 ft. fan		2	Oct. 1909	Yes	Yes	Yes	Yes	1	2		
Pullen & Sons Coal Co	4⅝ ft. fan		1		Yes	Yes	Yes	Yes	1	2		
Stephenson, J. J. Coal Co												
Stone, C. T	Natural								2			
Taylor, R. J	Natural				No							
Wear, Coal Co	12 ft. fan	Crawford & McCrimson	2	Dec. 1909	No	Yes	Yes		1			
Western C. & M. Co., No. 9	10 ft. fan	Crawford & McCrimson	1	Dec. 1909	No	Yes	Yes	Yes	1			
Western C. & M. Co., No. 17	16 ft. fan	Crawford & McCrimson	2	Dec. 1909	No	Yes	Yes	Yes	1			

BATES COUNTY.

Name of company or person operating.	How ventilated.	Name of fan.	No. boilers	Date of last inspection.	Safety catches used.	Signal system.	Daily inspection.	Inspection of hoisting equipment.	No. air shafts	No. splits	No. new mines opened	No. old mines abandoned
Amsterdam Coal Co	Natural		1		No	Yes	Yes	Yes	1			
Atlas Coal M. & M. Co	16 ft. fan	United Iron Works Co	2	Sept 1909	Yes	Yes	Yes	Yes	1	2		
Ayer, U												
Baker, Joseph	Natural											
Carr Coal M. & M. Co	12 ft. fan		2	Nov. 1909	Yes	Yes	No		2			
Decker, H. W	Natural				No	No	No	No	1		1	1
Diller, Sam	Natural								1			
Dunkerly Coal Co	Furnace				No	Yes	Yes	Yes	1	2		
Fleming Coal Co												
Harris, J. A												
Hair, Miller & Bradford	Natural										1	

TABLE 3—Continued.

BATES COUNTY—Continued.

Name of company or person operating.	How ventilated.	Name of fan.	No. boilers	Date of last inspection.	Safety catches used.	Signal system.	Daily inspection.	Inspection of hoisting equipment.	No. air shafts	No. splits	No. new mines opened	No. old mines abandoned
Henley, R. J												
Heckadon, P. L	Furnace											
Holland Coal Co	10 ft. fan	Crawford & Mc Crimson	1	Jan. 1910	Yes	Yes	Yes	Yes	1			
Johnson, King	Furnace								1			3
McClendon, Harry	Furnace						Yes	Yes	1			
McConnel, W. A. & Sons	Furnace				No				2			
Metzler & Shelton												
Pearson Bros												
Peeler, D. D												
Ritchie, H. C	Natural		1						1			
Scott, Thos. B												
Smalley, J. M	Natural								1			
Sprague Coal Co	Furnace											
Tarver, E. R												
Tatley, J. V	7½ ft. fan		1			Yes	Yes	Yes	3			
Wear, Emmet	Natural		1		No	No	No	Yes	1			

BOONE COUNTY.

Name of company or person operating.	How ventilated.	Name of fan.	No. boilers	Date of last inspection.	Safety catches used.	Signal system.	Daily inspection.	Inspection of hoisting equipment.	No. air shafts	No. splits	No. new mines opened	No. old mines abandoned
Davis & Watson	10 ft. fan	Ottumwa	1	Aug. 1909	Yes	Yes	Yes	Yes	1			
Davis, Isaac R	Natural				No	No			1			
McGee, Lonnie	Furnace		1						1	3		
Prather, W. R	Furnace				Yes	Yes	Yes	Yes	1			
Shock, R. L	Furnace						Yes	Yes	1			
Sutton, W. C	Natural								1			

CALDWELL COUNTY.

Name of company or person operating.	How ventilated.	Name of fan.	No. boilers	Date of last inspection.	Safety catches used.	Signal system.	Daily inspection.	Inspection of hoisting equipment.	No. air shafts	No. splits	No. new mines opened	No. old mines abandoned
Caldwell Coal Co	10 ft. fan	Force	1	May 1909	Yes	Yes	Yes	Yes	1	2		

TABLE 3—Continued.

CALLAWAY COUNTY.

Name of company or person operating.	How ventilated.	Name of fan.	No. boilers	Date of last inspection.	Safety catches used.	Signal system.	Daily inspection.	Inspection of hoisting equipment.	No. air shafts	No. splits	No. new mines opened	No. old mines abandoned
Bell, Eli	Furnace								1			1
Clark, Geo	Furnace				No	No	Yes	Yes	1			
Fulton Coal Co	8 ft. fan		1	Oct. 1909	Yes	Yes	Yes	Yes	1			
Fulton Fire Brick Co	6 ft. fan		1		Yes	Yes	Yes	Yes	1	1		
Harris & Trigg	Furnace				Yes	No	Yes	Yes	1			
Morsinkhoff, John	Natural								1			
Nickolson, C. M	Natural				No	Yes	Yes	Yes	1			
Reed, J. W	Furnace				Yes	Yes	Yes	Yes	3			
Simmons, J. W	Furnace					Yes			1			
Skelley, E	Furnace											1
Smith, David	4 ft. fan											
Sulzer, J. W	6 ft. fan							Yes				

CARROLL COUNTY.

Name of company or person operating.	How ventilated.	Name of fan.	No. boilers	Date of last inspection.	Safety catches used.	Signal system.	Daily inspection.	Inspection of hoisting equipment.	No. air shafts	No. splits	No. new mines opened	No. old mines abandoned
Cowan, R. M	Natural					Yes	Yes				1	1
Kenyon, J. A	Natural					Yes	Yes					
O'dell, James	Natural								1			

CASS COUNTY.

Name of company or person operating.	How ventilated.	Name of fan.	No. boilers	Date of last inspection.	Safety catches used.	Signal system.	Daily inspection.	Inspection of hoisting equipment.	No. air shafts	No. splits	No. new mines opened	No. old mines abandoned
Creighton Tile & Coal Co	8 ft. fan		1	April 1909	Yes	Yes	Yes	Yes	1	1		

CHARITON COUNTY.

Name of company or person operating.	How ventilated.	Name of fan.	No. boilers	Date of last inspection.	Safety catches used.	Signal system.	Daily inspection.	Inspection of hoisting equipment.	No. air shafts	No. splits	No. new mines opened	No. old mines abandoned
Collett, Lizzie M												
Dooley, J. A	Natural											
Kahler, W. J												
Kingsley Bros	Natural								1		2	1
Rothville C. & M'g. Co	Furnace				No			Yes			1	
Strickland, J. C	Natural											
Watson, S. E	Natural										1	

TABLE 3—Continued.

Name of company or person operating.	How ventilated.	Name of fan.	No. of boilers	Date of last inspection.	Safety catches used.	Signal system.	Daily inspection.	Inspection of hoisting equipment.	No. air shafts	No. splits	No. new mines opened	No. old mines abandoned
CLAY COUNTY.												
Missouri City Coal Co	10 ft. fan		1	Feb. 1910	Yes	Yes	Yes	Yes	1	1		
COLE COUNTY.												
Bandelier, S. & A	Natural				No	Yes	Yes	Yes	1			
DADE COUNTY.												
Hickman, O	Natural								1		1	
Stout, W. A	Natural						Yes		1		1	1
Windes, W. H	Natural				No	No	Yes	Yes	3		1	
GRUNDY COUNTY.												
Trenton Mining Co	10 ft. fan	Cole			Yes	Yes	Yes	Yes	1	2		
HENRY COUNTY.												
Anaconda Coal Co	Furnace				Yes	Yes	Yes	Yes	1			1
Bowen Coal Co	14 ft. fan	Ottumwa	4	Dec. 4, 1909	Yes	Yes	Yes	Yes	2	8		
Brush Coal Co	Furnace		1		Yes	Yes	Yes	Yes	1		1	
Dickey, W. S	10 ft. fan	Riverside	1		Yes	Yes	Yes	Yes	1	1		
England, James C. Co	Furnace		1		Yes	Yes	Yes	Yes	1			
Hughes, W. E	Natural								1	1		
Hurst Coal Co	12 ft. fan		1	Nov. 18, 1909	Yes	Yes	Yes	Yes				
Lane, M. E	Natural								1		1	
Lewis Coal Co	Furnace		1		Yes				1			
Parks, A. F	Natural								1	2		
Pharis & Rivers	Furnace				Yes	No	Yes	Yes	1			
Reese, Wm. D	Natural								1			
Rusk, W. H	Natural				Yes				1			
Standard Coal Co	Furnace				Yes	No	Yes	Yes	1			

TABLE 3 · Continued.

HOWARD COUNTY.

Name of company or person operating.	How ventilated.	Name of fan.	No. boilers	Date of last inspection.	Safety catches used.	Signal system.	Daily inspection.	Inspection of hoisting equipment.	No. air shafts	No. splits	No. new mines opened	No. old mines abandoned
Collins, W. H	Natural				No	No	Yes					
Pitney, Alexander	Natural										1	
Pitney, O. S	Natural								1			
Rohr, O. B	Natural				No	No	No	No	1		1	1

JOHNSON COUNTY.

Name of company or person operating.	How ventilated.	Name of fan.	No. boilers	Date of last inspection.	Safety catches used.	Signal system.	Daily inspection.	Inspection of hoisting equipment.	No. air shafts	No. splits	No. new mines opened	No. old mines abandoned
Burns, M. F												
Bullock, D. A	Natural											
Bullock, P. H												
Jacobs, W. D	Natural						Yes	Yes	1		1	1
Meily, M. B	Natural								1			1
Millard, Frank	Natural						Yes		1	1		1
McGrath, John												
Sutherland Coal Co	8 ft. fan		1	Dec. 6, 1909	Yes	Yes	Yes	Yes				

LAFAYETTE COUNTY.

Name of company or person operating.	How ventilated.	Name of fan.	No. boilers	Date of last inspection.	Safety catches used.	Signal system.	Daily inspection.	Inspection of hoisting equipment.	No. air shafts	No. splits	No. new mines opened	No. old mines abandoned
Aull, Edw. Coal Co	10 ft. fan		1						1			
Arnschild, John												3
Bell & Greer	Furnace								1			
Bonanza Coal Co	8 ft. fan	Raasch			Yes	Yes	Yes	Yes	1			
Boedeker Coal Co	Natural				Yes		Yes		2			
Canterberry & Griffith	4 ft. fan								1			
Clay, Tom	Furnace								2			
Cary, B. F	Furnace				Yes	Yes	Yes	Yes	1	6		
Corder Coal Co	Furnace				Yes			Yes				
Diamond Coal Co., "S. F."	10 ft. fan	Raasch	1	Dec. 1909	Yes	Yes	Yes	Yes	1	1		
Diamond Coal Co., "Wilson"	10 ft. fan	Raasch	2	Dec. 1909	Yes	Yes	Yes	Yes	1	1		
Dover Coal Co	10 ft. fan		1	Dec. 1909	No	No	Yes	No	1	4		
Duncan, Harvey	Furnace								1	2		
Emison, S. G												
Farmer's Coal Co., No. 1	10 ft. fan	Cole	8	Jan. 1910	Yes	Yes	Yes	Yes	3	1		
Farmers' Coal Co., No. 3	8 ft. fan	Cole										
Farmers' Coal Co., No. 6	10 ft. fan	Cole										
Farmers' Coal Co., No. 7	Furnace											

TABLE 3—Continued.

LAFAYETTE COUNTY—Continued.

Name of company or person operating.	How ventilated.	Name of fan.	No. boilers	Date of last inspection.	Safety catches used.	Signal system.	Daily inspection.	Inspection of hoisting equipment.	No. air shafts	No. splits	No. new mines opened	No. old mines abandoned
Fallman, Edw												
Gann & Bledsoe	Furnace								1			
Hohenwald Bros	Furnace							Yes	1			
Independence Coal M'g. Co	5 ft. fan		2	Feb. 1910	Yes	Yes	Yes	Yes	1			
Kratz & Son	Furance				Yes				1			
Labor Exchange No. 305	5 ft. fan		2						2			
Lanning-Harris C. & G. Co	12 ft. fan	Cole	2	Dec. 1909	No	No	No	No	2			
Martens, Jacob												
McGrew Coal Co	10 ft. fan	Cole	3	Jan. 1910					2	5		
Painter, C. S	Natural								1			
Plattenburg Coal Co	Furnace								2			
Rost, Wm. C	Natural		1		No	No	No	No	2			
Sebastian, R	8 ft. fan	Raasch	1	Nov. 1909	Yes	Yes	Yes	Yes	2	2		
Sipe, C. C. & Son	Furnace								1			
Stolen, Anton	Furnace								1			
Stoll Bros	Furnace						Yes		1			
Summers, M. W	Natural								1			
Tyler, J. W	Natural								2			
Van Guilder, E. M	Furnace											
Waverly Brick & Coal Co	14 ft. fan		1		Yes	Yes	Yes	Yes	1		1	
Western C. & M. Co., "South"	12 ft. fan	Crawford & McCrimson	3	Jan. 1910	Yes	Yes	Yes	Yes	1	3		
Western C. & M. Co., "Summit"	12 ft. fan	Crawford & McCrimson	1	Jan. 1910	Yes	Yes	Yes	Yes	1	3		
Western C. & M. Co., "Midway"	12 ft. fan	Crawford & McCrimson	4	Jan. 1910	Yes	Yes	Yes	Yes	1	3		
Western C. & M. Co., "Valley"	12 ft. fan	Crawford & McCrimson	1	Jan. 1910	Yes	Yes	Yes	Yes	1	3		
Wegener, J. C	Furnace				Yes	No	No	Yes	1	1		
Whitley, Scott	Furnace											
Wright, Jas	Furnace											
Wright, Sam'l & Frank	Furnace								2			

LINN COUNTY.

Name of company or person operating.	How ventilated.	Name of fan.	No. boilers	Date of last inspection.	Safety catches used.	Signal system.	Daily inspection.	Inspection of hoisting equipment.	No. air shafts	No. splits	No. new mines opened	No. old mines abandoned
Barr, Chas	Furnace				Yes				1			
Bucklin Coal Co	5 ft. fan		1	Jan. 1910	Yes	Yes		Yes				
Crandall, W. E	Furnace											
Landreth Coal Co	10 ft. fan		1		Yes	Yes	Yes	Yes	1	1		
Marceline C. & M. Co., No. 1	14 ft. fan	Crawford & McCrimson	2	Nov. 1909	Yes	Yes	Yes	Yes	1	1		
Marceline C. & M. Co., No. 2	14 ft. fan		1	Nov. 1909	Yes	Yes	Yes	Yes	1	1		

TABLE 3—Continued.

LINN COUNTY—Continued.

Name of company or person operating.	How ventilated.	Name of fan.	No. boilers	Date of last inspection.	Safety catches used.	Signal system.	Daily inspection.	Inspection of hoisting equipment.	No. air shafts	No. splits	No. new mines opened	No. old mines abandoned
Sheehan, J. E.	Furnace				Yes	No	Yes	Yes	1			
Wine, G. C.	Furnace				Yes		Yes	Yes				

LIVINGSTON COUNTY.

Name of company or person operating.	How ventilated.	Name of fan.	No. boilers	Date of last inspection.	Safety catches used.	Signal system.	Daily inspection.	Inspection of hoisting equipment.	No. air shafts	No. splits	No. new mines opened	No. old mines abandoned
Cox, Ira B.	Natural				Yes				1			
Fulwood, Wm.	Natural				No	No		Yes	1		1	

MACON COUNTY.

Name of company or person operating.	How ventilated.	Name of fan.	No. boilers	Date of last inspection.	Safety catches used.	Signal system.	Daily inspection.	Inspection of hoisting equipment.	No. air shafts	No. splits	No. new mines opened	No. old mines abandoned
Badgerow, David	Furnace					No	Yes	Yes				
Central C. & C. Co., No. 25	10 ft. fan		2		Yes	Yes	Yes	Yes	2			
Central C. & C. Co., No. 28	12 ft. fan	Crawford & McCrimson	2	June 1909	Yes	Yes	Yes	Yes	1	6		
Central C. & C. Co., No. 61	15 ft. fan	United Iron Works	5	June 1909	Yes	Yes	Yes	Yes	3	7		
Central C. & C. Co., No. 66	12 ft. fan		3		Yes	Yes	Yes	Yes	1			
Dennis, J. H.	Furnace								1			
Hurd & Hurd	Furnace				No	Yes	Yes	Yes	1	1		
Isaacson & Underwood	Natural				No	Yes	Yes	Yes	1		1	
James Brothers	Furnace								1			
Jones, John H.	Furnace				No	Yes	Yes	Yes				
Lehman, H. A.	Natural								1	1		
Lunsford, H. W.	Natural										1	
Northwestern C. & M. Co., No. 8	14 ft. fan		3	Jan. 1910						4		
Northwestern C. & M. Co., No. 9	14 ft. fan	Crawford & McCrimson	3	Jan. 1910	Yes	Yes	Yes	Yes	1	2		
Parry, J. P.	Furnace											1

MONITEAU COUNTY.

Name of company or person operating.	How ventilated.	Name of fan.	No. boilers	Date of last inspection.	Safety catches used.	Signal system.	Daily inspection.	Inspection of hoisting equipment.	No. air shafts	No. splits	No. new mines opened	No. old mines abandoned
Monarch C. & M. Co.	Natural		1		No	Yes	No	No	1			

TABLE 3—Continued.

Name of company or person operating.	How ventilated.	Name of fan.	No. boilers	Date of last inspection.	Safety catches used.	Signal system.	Daily inspection.	Inspection of hoisting equipment.	No. air shafts	No. splits	No. new mines opened	No. old mines abandoned
MONROE COUNTY.												
Gilbert, J. B	Natural											
MONTGOMERY COUNTY.												
Biddleman, Wm	Natural											
Hammitt, C. E	Natural											
Noel, Buford	Natural											
Whitehead & Sons	Natural											
MORGAN COUNTY.												
Ouachita C. & C. Products Co	Natural		1		No	No	Yes	Yes	2			
PUTNAM COUNTY.												
Baugher, A. W	Natural											
Hawkins, John	Natural											
Humphreys, Richard	Natural											
Jones, Geo. F	Natural								1			
Means & De Garmo	4 ft. fan		1		Yes	Yes	Yes	Yes				
Mendota Coal Co., No. 2	12 ft. fan	Eagle Iron Works	2	Nov. 1909	Yes	Yes	Yes	Yes	1	1		
Mendota Coal Co., No. 7	Furnace								1			
Mendota Coal Co., No. 9	Furnace								2			
Mo. Mng., Mfg. & Merc. Co	Furnace				Yes	Yes	Yes	Yes	2			
Moore Coal Co	Natural								1			
Robbins, J. A	Furnace								1			
Rogers Coal Co	Furnace								1			
Seavey & Triplett	Natural						Yes	Yes	1	2	1	1
Shelton, Wm. E. & Sons	Natural				No	No	Yes	Yes	1			
Stevens, Americus	Natural						Yes				1	1

TABLE 3—Continued.

PLATTE COUNTY.

Name of company or person operating.	How ventilated.	Name of fan.	No. boilers	Date of last inspection.	Safety catches used.	Signal system.	Daily inspection.	Inspection of hoisting equipment.	No. air shafts	No. splits	No. new mines opened	No. old mines abandoned
Home Riverside Coal Co	25 ft. fan		9	Nov. 1909	Yes	Yes	Yes	Yes				

RALLS COUNTY.

Name of company or person operating.	How ventilated.	Name of fan.	No. boilers	Date of last inspection.	Safety catches used.	Signal system.	Daily inspection.	Inspection of hoisting equipment.	No. air shafts	No. splits	No. new mines opened	No. old mines abandoned
Clark Coal Co	7 ft. fan				No	Yes	Yes		1		1	
Dixon, Joseph	Natural										1	
Ralls Co. Coal Co	7½ ft. fan				No	Yes	Yes	Yes	1			
Smith, Henry & Sons	Furnace											
Tighe Coal & Mng. Co	Furnace				No	Yes	Yes	Yes	2			

RANDOLPH COUNTY.

Name of company or person operating.	How ventilated.	Name of fan.	No. boilers	Date of last inspection.	Safety catches used.	Signal system.	Daily inspection.	Inspection of hoisting equipment.	No. air shafts	No. splits	No. new mines opened	No. old mines abandoned
Bowden, John									1			
Bradley, D. T	Furnace					Yes	Yes		1	1	1	
Burge Bros	Furnace								1			
Clark, D. E	Furnace											
Cronan, J. M	Furnace				No	No	Yes	Yes	1		1	
Demart & Clam	Furnace								1			
Diamond Coal Co	Furnace								1		1	1
Durham, Daniel	Natural								1			
Davidson, D. C	Natural								1			
Esry, Andrew	Natural								2			
Eravi, Joseph	Natural								1			
Goett, P. J	Natural						Yes		1			
Jackson & Harris	Natural								1			
McKiernan, W. H	Natural								1		1	
Mitchell, W. E., C. & M. Co	Furnace						Yes		1			
Milburn Bros	Furnace						Yes	Yes	1			
Morris, G. W. & Son	Furnace						Yes					
Northern Central C. Co., No. 2	14 ft. fan	Wm. Ellison	3	Dec. 1909	Yes	Yes	Yes	Yes	1			
Northern Central Coal Co., No. 11	12 ft. fan	Brownell	4	Dec. 1909	Yes	Yes	Yes	Yes	1	6		
O'Toole, Joseph	Natural						Yes		1			
Pilkington, John	Natural										1	
Slaughter, J. M	Natural											
Smith Heirs												

TABLE 3—Continued.

RANDOLPH COUNTY—Continued.

Name of company or person operating.	How ventilated.	Name of fan.	No. boilers	Date of last inspection.	Safety catches used.	Signal system.	Daily inspection.	Inspection of hoisting equipment.	No. air shafts	No. splits	No. new mines opened	No. old mines abandoned
Vaughn, W. T	Furnace								5			
Ward, Henry	Furnace				Yes	No	No	Yes				
Williams, L. B	Furnace								1			
Williams & Rupp	Furnace		1			Yes						

RAY COUNTY.

Name of company or person operating.	How ventilated.	Name of fan.	No. boilers	Date of last inspection.	Safety catches used.	Signal system.	Daily inspection.	Inspection of hoisting equipment.	No. air shafts	No. splits	No. new mines opened	No. old mines abandoned
Blair, Hugh	4 ft. fan				Yes	No	Yes	Yes	1	1		
Brockman, J. C. & A. B	Natural				No	No			1			
Calnen-Blair Coal Co	Fan		1		Yes	Yes	Yes	Yes	1	2		
Central C. & C. Co., Mine No. 50	12 ft. fan		2		Yes	Yes	Yes	Yes	1	2		
Clark, Jacob	2 ft. fan		1				Yes		1			1
Collier, J. W	Furnace						Yes					5
Crawford-Wilson Coal Co	10 ft. fan	Crawford & McCrimson	1	Jan. 1910	Yes	Yes	Yes	Yes	2	1		
Doran, John	Natural								1			
Fowler C. & Mng. Co	12 ft. fan	Crawford & McCrimson	2		Yes	Yes	Yes	Yes	1	1		
Gant, J. M	Natural											3
Huston, Fred	Furnace											
Hymer, O. P	3½ ft. fan		1	Aug. 1909	Yes	Yes	Yes	Yes	1	2		
Loeven, M. J	Furnace											
Maple Hill Coal Co	10 ft. fan	Crawford & McCrimson	1	Aug. 1909	Yes	Yes	Yes	Yes	1	1		
Martin-Hubbell-Osborne:												
Mine No. 3	10 ft. fan		1		Yes	Yes	Yes	Yes	1			
Mine No. 7	10 ft. fan		1		Yes	Yes	Yes	Yes	1			
Mine No. 10	10 ft. fan		1		Yes	Yes	Yes	Yes	1			
Mine No. 22	10 ft. fan		1		Yes	Yes	Yes	Yes	1			
McCorkendale, J. R.	Furnace					No	Yes		1	2		
McDaniel, J. L.	Natural								1	2		
Mercantile C. & M. Co	10 ft. fan	Crawford & McCrimson	2	Nov. 1909	Yes	Yes	Yes	Yes	1	2		
O'dell, E. R	Furnace						Yes		1			
Ottman & Nelson	Furnace				Yes	Yes	No	No	1			
Pence & Calnen Coal Co	8 ft. fan				Yes	No	Yes	Yes	1			
Pickering Coal Co., No. 9	10 ft. fan	Eagle	1	June 1909	Yes	Yes	Yes	Yes			1	1
Pickering Coal Co., No. 11	10 ft. fan	Eagle	1	June 1909	Yes	Yes	Yes	Yes				
Ray County C. B. & T. Co	Natural				Yes	Yes	Yes	Yes				
Rice, Perry	Furnace				Yes	No						1
Richmond & Camden Coal Co	12 ft. fans	1 Cole— 1 Crawford	6		Yes	Yes	Yes	Yes	2	6		

TABLE 3—Continued.

RAY COUNTY—Continued.

Name of company or person operating.	How ventilated.	Name of fan.	No. boilers	Date of last inspection.	Safety catches used.	Signal system.	Daily inspection.	Inspection of hoisting equipment.	No. air shafts	No. splits	No. new mines opened	No. old mines abandoned
Ramsey, Robert	Furnace						Yes		2	3		
Shea, Thos. & Sons	Furnace				No				2	2		
Turner & Son	Natural		1		Yes	Yes	Yes		4			
Thompson, Geo. W	Natural				Yes	Yes	Yes	Yes	1			
Vibbard Coal Co	Natural		2	Jan. 1910	Yes	Yes	Yes	Yes		1		
Ward, W. O	Furnace				Yes	Yes	Yes	Yes		1		
Watson, Jas. N	Furnace				Yes				1			
Woodruff, John	Natural										1	
SALINE COUNTY.												
Garver, J. N	Natural								1			
ST. CLAIR COUNTY.												
Cook, Jas. M												
Collins, J. C	Furnace								1	2	1	1
Greathouse, T. L	Natural										1	
SCHUYLER COUNTY.												
Golston, Ira	Natural											
Hymes, J. W	Natural											
Long, G. B	Natural											
Mock & Grindle	Furnace								1			
Watson, Jesse	Natural								1			
SULLIVAN COUNTY.												
Milan Coal Co	8 ft. fan		2	Feb. 1910	Yes	Yes	Yes	Yes	1	1		

TABLE 3—Continued.

VERNON COUNTY.

Name of company or person operating.	How ventilated.	Name of fan.	No. boilers	Date of last inspection.	Safety catches used.	Signal system.	Daily inspection.	Inspection of hoisting equipment.	No. air shafts	No. splits	No. new mines opened	No. old mines abandoned
Brown, A. S	Furnace				No	Yes	Yes	Yes	1		1	1
Carbon Coal Co	Furnace		2			Yes	Yes	Yes	1			
Davis, Jas. P	Natural											
Ewing, W. H												
Flake, J. W	Natural											
Jones Coal Co	Fan		2	Dec. 1909		Yes	Yes	Yes	2	1		1
Koch, Herman												
Prewitt, Wm. T												
Palmer, D. L												
Tuttle & Neagle	Natural											

Table 4—Powder Consumed, Number of Days Worked, Number of Employes, Number of Animals.

ADAIR COUNTY.

Name of company or person operating.	Powder.		No. days worked, 1909.	Employes.						Total number employes.		No. animals used.	
				Miners.		Other help under ground.		Other help above ground.					
	Kegs consumed.	Cost to miners		Winter.	Summer	Winter.	Summer	Winter.	Summer	Winter	Summer	Winter.	Summer
Arctic Coal Co.	100	$200	240	9		2	2	2	1	13	3	1	1
Big Creek Coal Co.	66	132	200	4	2	1	1	1	1	6	4		
Consolidated Stahl C. Co.			186	78	50	20	10	6	6	104	66	5	3
Great Northern Fuel Co., No. 1	964	1,928	81	34		23		12		69		4	
Great Northern Fuel Co., No. 21	1,781	3,562	217	30	25	19	16	6	7	55	48	2	2
Great Northern Fuel Co., No. 23	3,399	6,798	241	46	49	26	7	28	8	100	64	6	6
Hazel Creek Coal Co.	60	120	180	5				1		6			
Ivie, J. M. & Sons	100	200	93	15	5	3		2		20	3	1	1
Kansas City-Midland C. M. Co.	6,000	12,000	200	175	150	75	60	10	10	260	220	25	18
Lee, John	65	130	100	3		1		1		5		1	
Manufacturers' C. & C. Co., No. 1	3,474	6,948	260	85	53	30	24	10	8	125	85	10	8
Manufacturers' C. & C. Co., No. 4	3,658	7,316	272	65	45	23	17	9	7	97	79	8	7
Manufacturers' C. & C. Co., No. 50	1,356	2,712	156	58		22		9		89		7	
Rombauer Coal Co.	11,711	23,422	258	300	250	150	125	50	40	500	415	32	25
Star Coal Co.	200	400	211	10	10	4	4	4	4	18	18	1	1
Totals	32,934	$65,868		917	639	399	266	151	92	1,467	1,005	103	72

AUDRAIN COUNTY.

Name of company or person operating.	Kegs consumed.	Cost to miners	No. days worked, 1909.	Miners. Winter.	Miners. Summer	Other help under ground. Winter.	Other help under ground. Summer	Other help above ground. Winter.	Other help above ground. Summer	Total number employes. Winter	Total number employes. Summer	No. animals used. Winter.	No. animals used. Summer
Audrain Coal Co.			278	48	48	7	7	4	4	59	59	3	3
Davidson, W. H.	6	$12	300	6	3			1	1	7	4		
Martinsburg Coal Co.				20	18	2	2	2	2	24	22	1	1
Self & Williams				8	3			1	1	9	4		
Lawder-Peterson Coal Co.	4	8	275	8	6	2	1	2	1	12	8	1	1
Standard C. & M. Co.			327	26	14	23	12			49	26		
Totals	10	$20		116	92	34	22	10	9	160	123	5	5

TABLE 4—Continued.

BARTON COUNTY.

Name of company or person operating.	Powder.		No. days worked, 1909	Employes.						Total number employes.		No. animals used.	
				Miners.		Other help under ground.		Other help above ground.					
	Kegs consumed	Cost to miners		Winter	Summer	Winter	Summer	Winter	Summer	Winter	Summer	Winter	Summer
Betz, Jacob			70		2		1		1		4		
Cackley, R. E			130	4	2					4	2		
Clark Bros			30										
Creekmore, W. P			30	1						1			
Correlli Coal Co			180	15		5				20		1	
Davis Coal Co	200	$400	120	10	5	1	1	1	1	12	7	2	2
Freedling, W. H													
Gelvet, W. H			95										
Lasley, W. B	50	100	90	3						3		4	
Lavery, W. J	20	30	92	6		1		1		8			
Lawrence, Frank	6	10	70	1						1			
Mulkins, T. E			60	6	4					6	4		
Orahood, A. J	4	7	120	2	2					2	2		
Orahood, Wm	2	4											
Patterson, W. W. Coal Co	182	364	207	10	10					10	10		
Peck & Brummett			90										
Pittsburg Coal Co			110	10	10	2	2	1	1	13	13	1	1
Pittsburg & Midway Coal Co	4,965	9,930	205	110	80	15	12	12	9	137	101	6	4
Pullen & Sons Coal Co	650	1,300	200	9	6	2	2	2	2	13	10	1	1
Stephenson, J. J. Coal Co	359	718	285					5	5	5	5	12	20
Stone, C. T			156	2	1					2	1		
Taylor, R. J				3						3			
Wear Coal Co	2,025	4,050	153	40	40	7	7	3	3	50	50	3	3
Western C. & M. Co., No. 9	827	1,654	220	20	20	3	3	3	3	26	26	2	2
Western C. & M. Co., No. 17	3,962	7,924	230	70	70	11	11	7	7	88	88	5	5
Totals	13,252	$26,491		322	252	47	39	35	32	404	323	39	38

BATES COUNTY

Name of company or person operating.	Kegs consumed	Cost to miners	No. days worked, 1909	Miners Winter	Miners Summer	Other help under ground Winter	Other help under ground Summer	Other help above ground Winter	Other help above ground Summer	Total Winter	Total Summer	Animals Winter	Animals Summer
Amsterdam Coal Co	20	$30	20	4				2		6		1	
Atlas Coal M. & M. Co	2,671	5,342	137	75	75	20	20	9	9	104	104	7	7
Ayer, U	10	20	60	4						4			
Baker, Joseph	2	3		1	1					1	1		
Carr Coal M. & M. Co				15	8	4	2	2	1	21	11	3	2
Decker, H. W	5	10	80	2						2			

TABLE 4—Continued.

BATES COUNTY—Continued.

Name of company or person operating.	Powder.		No. days worked, 1909	Employes.						Total number employes.		No. animals used.	
	Kegs consumed	Cost to miners		Miners.		Other help under ground.		Other help above ground.					
				Winter	Summer	Winter	Summer	Winter	Summer	Winter	Summer	Winter	Summer
Diller, Sam				2						2			
Dunkerly Coal Co	1,480	$2,960	241	20	15	3	3	2	2	25	20	1	1
Fleming Coal Co	50	100		6	6					6	6	1	
Harris, J. A													
Hair, Miller & Bradford	25	50	30	4						4			
Henley, R. J	1	2	30										
Heckadon, P. L	100	150		8						8		1	
Holland Coal Co	906	1,721	207	25	25	4	4	4	3	33	32	3	3
Johnson, King				4	4			3	3	7	7	1	1
McClendon, Harry	8	22	200	5	3			1	1	6	4		
McConnell, W. A. & Sons	125	250	150	12	6	1	1	2	2	15	9	1	1
Metzler & Shelton	26	39	90					9		9			
Pearson Bros	6	9	60	1						1		4	
Peeler, D. D	20	30	150	3	8					3	8	6	
Ritchie, H. C	150	300	111	10	2			4		14	2	1	
Scott, Thos. B	10	15		2	1					2	1		
Smalley, J. M	25	44	100	1						1			
Sprague Coal Co	100	170	100	4		1		1		6		1	
Tarver, E. R													
Tatley, J. V	355	710		24	5	4	2	2	2	30	9	1	1
Wear, Emmet	400	800		20	20	2	2	5	4	27	26	2	2
Totals	6,495	$12,777		252	179	39	34	46	27	337	240	34	18
BOONE COUNTY.													
Davis & Watson	240	$480	300	18	8	5	3	2	1	25	12	3	1
Davis, Isaak R.	40	72	150	8	4	2	2	1	1	11	7	1	1
McGee, Lonnie	1	2	100	2	1					2	1		
Prather, W. R.	400	800	261	40	15	8	3	3	1	51	19	4	2
Shock, R. L.	50	100	200	6	3					6	3		
Sutton, W. C.	100	175	250	8	6					8	6		
Totals	831	$1,629		82	37	15	8	6	3	103	48	8	4

TABLE 4—Continued.

Name of company or person operating.	Powder.		No. days worked, 1909	Employes.						Total number employes.		No. animals used.	
				Miners.		Other help under ground.		Other help above ground.					
	Kegs consumed	Cost to miners		Winter	Summer	Winter	Summer	Winter	Summer	Winter	Summer	Winter	Summer
CALDWELL COUNTY.													
Caldwell Coal Co			300	50	25	5	4	7	5	62	34	3	2
CALLAWAY COUNTY.													
Bell, Eli				2				1		3			
Clark, Geo. W	2	$4	200	2	2			2	2	4	4		
Fulton Coal Co			238	28	16	2	2	2	2	32	20		
Fulton Fire Brick Co			200	20	20	2	2	2	2	24	24		
Harris & Trigg			100	16	8	2	1	2	1	20	10		
Morsinkhoff, John			100	1	1					1	1		
Nickolson, C. M	100	185	300	4	4			1	1	5	5		
Reed, J. W	50	88	300	6	6					6	6		
Simmons, J. W			300	16	10	2	1	2	1	20	12	1	1
Skelley, E				5						5			
Smith, David			150	8						8			
Sulzer, J. W				6				1		7			
Totals	152	$277		114	67	8	6	13	9	135	82	1	1
CARROLL COUNTY.													
Cowan, R. M			100	5						5			
Kenyon, J. A	2	$4		6	2					6	2		
O'Dell, James													
Totals	2	$4		11	2					11	2		
CASS COUNTY.													
Creighton Tile & Coal Co	400	$800	285	20	15	6	5	6	5	32	25	2	2

TABLE 4—Continued.

Name of company or person operating.	Powder.		No. days worked, 1909	Employes.						Total number employes.		No. animals used.	
				Miners.		Other help under ground.		Other help above ground.					
	Kegs consumed	Cost to miners		Winter	Summer	Winter	Summer	Winter	Summer	Winter	Summer	Winter	Summer
CHARITON COUNTY.													
Collett, Lizzie M													
Dooley, J. A			150	5	2					5	2		
Kahler, W. J			8	2						2			
Kingsley, Bros			100	3						3			
Rothville C. & M'g. Co				3						3			
Strickland, J. C			200	2	2					2	2		
Watson, S. E			18										
Totals				15	4					15	4		
CLAY COUNTY.													
Missouri City Coal Co			242	100	90	19	18	7	7	126	115	6	6
COLE COUNTY.													
Bandelier, S. & A	68	$98	162	2	2	2	2	2	2	6	6		
DADE COUNTY.													
Hickman, O			200	6	6					6	6		
Stout, W. A			140	10	2			1		11	2		
Windes, W. H			120	7	7			1	1	8	8		
Totals				23	15			2	1	25	16		
GRUNDY COUNTY.													
Trenton Mining Co			263	50	18	4	3	3	3	57	24	2	2

TABLE 4—Continued.

HENRY COUNTY.

Name of company or person operating.	Powder.		No. days worked, 1909	Employes.						Total number employes.		No. animals used.	
	Kegs consumed	Cost to miners		Miners.		Other help under ground.		Other help above ground.		Winter	Summer	Winter	Summer
				Winter	Summer	Winter	Summer	Winter	Summer				
Anaconda Coal Co	3	$6	9	2						2			
Bowen Coal Co	15,400	30,800	240	225	225	50	50	25	25	300	300	30	30
Brush Coal Co	900	1,800	240	20	20	3	3	2	2	25	25	2	2
Dickey, W. S	960	1,920		28	28	5	5	3	3	36	36	2	2
England, James, Coal Co	396	792	254	9	9	1	2	1	1	11	12		
Hughes, W. E	97	184	160	4				1		5			
Hurst, John, Coal Co	740	1,480	246	25	22	3	3	3	3	31	28	3	3
Lane, M. E				15	6	2		2		19	6		
Lewis Coal Co			300	15	15	5		5		25	15	1	
Parks, A. F			208	14	12	2	2			16	14	1	1
Pharis & Rivers	300	525	240	15	8	1	1			16	9		
Reese, Wm. D				2	1					2	1		
Rusk, Wm. H	40	64	90	4						4			
Standard Coal Co	192	384	240	6	4	1	1	1	1	8	6	1	1
Totals	19,028	$37,955		384	350	73	67	43	35	500	452	40	39
HOWARD COUNTY.													
Collins, W. H			90	2	2					2	2		
Pitney, Alexander			94	4	2	5	2	1		10	4	1	
Pitney, O. S	15	$25	50	4						4			
Rohr, O. B			110	6	2					6	2		
Totals	15	$25		16	6	5	2	1		22	8	1	
JOHNSON COUNTY.													
Burns, M. F	3	$6	150	1						1			
Bullock, D. A			60	2						2			
Bullock, P. H	10	20	150			3	3			3	3		
Jacobs, W. D	3	6		2	2					2	2		
Meily, M. B			300	5	1					5	1		

TABLE 4—Continued.

JOHNSON COUNTY—Continued.

Name of company or person operating.	Powder.		No. days worked, 1909.	Employes.						Total number employes.		No. animals used.	
				Miners.		Other help under ground.		Other help above ground.					
	Kegs consumed.	Cost to miners		Winter.	Summer	Winter.	Summer	Winter.	Summer	Winter	Summer	Winter	Summer
Millard, Frank	200	$380	300	6	4	2	2	1	1	9	7		
McGrath, John			100			3				3			
Sutherland Coal Co			240	6		1		2		9			
Totals	216	$412		22	7	9	5	3	1	34	13		

LAFAYETTE COUNTY.

Name of company or person operating.	Kegs consumed.	Cost to miners	No. days worked, 1909.	Miners Winter	Miners Summer	Other help under ground Winter	Other help under ground Summer	Other help above ground Winter	Other help above ground Summer	Total number employes Winter	Total number employes Summer	No. animals used Winter	No. animals used Summer
Aull, Edw., Coal Co			206	47	21	6	3	2	2	55	26	3	2
Arnschild, John			160	2						2			
Bell & Greer	4	$6	290	25	10	2	1	7	3	34	14	2	1
Bonanza Coal Co			150	35		8		2		45		3	
Boedeker Coal Co			300	6	6					6	6		
Canterbury & Griffith			240	11	9	1	1			12	10		
Clay, Tom				7	2	1	1			8	3		
Cary, B. F				25	15	3	3	3	3	31	21	2	2
Corder Coal Co			275	10	4	1		1		12	4		
Diamond Coal Co., "S. F."			185	98	98	24	24	8	8	130	130	7	7
Diamond Coal Co., "Wilson."			130										
Dover Coal Co			170	15	10	4	4			19	14	2	2
Duncan, Harvey			212	4	2					4	2		
Emison, S. G			80	6						6			
Farmers' Coal Co			211	200	50	150	50	25	20	375	120	20	5
Fallman, Ed				2						2			
Gann & Bledsoe			250	5	2					5	2		
Hohenwald Bros			243	3	2			1	1	4	3		
Independence C. M'g Co			175	25		4	2	2	2	31	4	2	
Kratz & Son			120	4						4			
Labor Exchange No. 305			265	35	35					35	35		
Lanning-Harris C. & G. Co			200	125	50	32	15	12	6	169	71	10	5
Martens, Jacob				2	1					2	1		
McGrew Coal Co			196	200	60	87	17	10	5	297	82	8	2
Painter, C. S					3						3		
Plattenberg Coal Co			300	22	15	1	1	1	1	24	17	1	1
Rost, Wm. C			102	3	1					3	1		

TABLE 4—Continued.

LAFAYETTE COUNTY—Continued.

Name of company or person operating.	Powder.		No. days worked, 1909	Employes.						Total number employes.		No. animals used.	
				Miners.		Other help under ground.		Other help above ground.					
	Kegs consumed	Cost to miners		Winter	Summer	Winter	Summer	Winter	Summer	Winter	Summer	Winter	Summer
Sebastian, R			287	10	17	2	3	1	2	13	22	2	2
Sipe, C. C. & Son			280	12	12			1	1	13	13		
Stolen, Anton				6	3			1	1	7	4		
Stoll Bros			255	7	4	1				8	4		
Summers, M. W			225	2	2					2	2		
Tyler, J. W			120	2						2			
Van Guilder, E. M			180	20				5		25		2	
Waverly Brick & Coal Co	3,000	$6,000	122	50	50	20	20	10	10	80	80	4	4
Western C. & M. Co.:													
South Mine			290	70	60	36	31	10	8	116	99	3	3
Summit Mine			271	132	132	64	64	14	12	210	208	7	7
Midway Mine			276	132	132	64	64	24	22	220	218	8	6
Valley Mine			279	145	130	56	54	14	12	215	196	8	6
Wegener, J. C			300	7	3	1	1	1	1	9	5		
Whitley, Scott			150	2						2			
Wright, James													
Wright, Sam'l & Frank				4				1		5			
Totals	3,004	$6,006		1,518	941	568	359	156	120	2,242	1,420	94	55

LINN COUNTY.

Name of company or person operating.	Kegs consumed	Cost to miners	No. days worked, 1909	Miners Winter	Miners Summer	Other help under ground Winter	Other help under ground Summer	Other help above ground Winter	Other help above ground Summer	Total number employes Winter	Total number employes Summer	No. animals used Winter	No. animals used Summer
Barr, Chas			200	14	6	1	1	1	1	16	8		
Bucklin Coal Co	139	$278	175	6				1		7			
Crandall, W. E			220	12	12					12	12		
Landreth Coal Co	10	20	253	20	8	2	2	2	2	24	12	1	1
Marceline C. & M. Co. No. 1			247	116	116	24	24	13	13	153	153	12	12
Marceline C. & M. Co No. 2	900	1,800	241	129	129	26	26	13	13	168	168	5	8
Sheehan, J. E			150	12	2	1		1	1	14	3		
Wine, G. C				5	3	1	1	1	1	7	5		
Totals	1,049	$2,098		314	276	55	54	32	31	401	361	21	21

TABLE 4 - Continued.

LIVINGSTON COUNTY.

Name of company or person operating.	Powder.		No. days worked, 1909	Employes.						Total number employes.		No. animals used.	
				Miners.		Other help under ground.		Other help above ground.					
	Kegs consumed	Cost to miners		Winter	Summer	Winter	Summer	Winter	Summer	Winter	Summer	Winter	Summer
Cox, Ira B			80	6				1		7			
Fulwood, Wm			200	2	2					2	2		
Totals				8	2			1		9	2		
MACON COUNTY.													
Badgerow, David	63	$126	200	3	1	1	1	1	1	5	3	1	1
Central Coal & Coke Co. No. 25	6,804	13,608	215	189	216	65	64	22	26	276	306	27	27
Central Coal & Coke Co. No. 28	3,448	6,896	109	147	147	41	8	15	5	203	160	14	2
Central Coal & Coke Co. No. 61	8,982	17,964	215	267	301	103	112	27	32	397	445	32	34
Central Coal & Coke Co. No. 66	5,781	11,562	200	172	204	83	82	25	21	280	307	32	32
Dennis, J. H	25	46	285	5	4			1	1	6	5		
Hurd & Hurd	100	125	300	10	5			2	1	12	6	1	1
Isaacson & Underwood	15	30	100	2		1		1		4			
James Bros	80	160	201	9	3	2	1	1	1	12	5	1	1
Jones, John H	80	160	200	5	2	1	1	1	1	7	4		
Lehman, H. A	40	74	130	2	1					2	1	1	1
Lunsford, H. W				3						3			
Northwestern C. & M. Co. No. 8	4,250	8,500	194	300	225	75	75	11	11	386	311	35	35
Northwestern C. & M. Co. No. 9	2,184	4,368	67	200		54	5	10	4	264	9	17	
Parry, J. P				4		1		1		6		1	
Totals	31,852	$63,619		1,318	1,109	427	349	118	104	1,863	1,562	162	134
MONITEAU COUNTY.													
Monarch C. & M. Co			160	6				2		8			
MONROE COUNTY.													
Gilbert, J. B			150	3						3			

TABLE 4—Continued.

MONTGOMERY COUNTY.

Name of company or person operating.	Powder.		No. days worked, 1909	Employes.						Total number employes.		No. animals used.	
	Kegs consumed	Cost to miners		Miners.		Other help under ground.		Other help above ground.					
				Winter	Summer	Winter	Summer	Winter	Summer	Winter	Summer	Winter	Summer
Biddleman, Wm	1	$2	52	2						2			
Hammitt, C. E			90	2	1					2	1		
Noel, Buford			200	5	2	2		1		8	2		
Whitehead & Sons	5	10	200	3	1			1	1	4	2		
Totals	6	$12		12	4	2		2	1	16	5		

MORGAN COUNTY.

Name of company or person operating.	Kegs consumed	Cost to miners	No. days worked, 1909	Miners Winter	Miners Summer	Other help under ground Winter	Other help under ground Summer	Other help above ground Winter	Other help above ground Summer	Total number employes Winter	Total number employes Summer	No. animals used Winter	No. animals used Summer
Ouachita C. & C. Products Co			200	5	5			3	3	8	8		

PUTNAM COUNTY.

Name of company or person operating.	Kegs consumed	Cost to miners	No. days worked, 1909	Miners Winter	Miners Summer	Other help under ground Winter	Other help under ground Summer	Other help above ground Winter	Other help above ground Summer	Total number employes Winter	Total number employes Summer	No. animals used Winter	No. animals used Summer
Baugher, A. W			90	3						3			
Hawkins, John				1						1			
Humphreys, Richard				4						4			
Jones, Geo. F			88	2						2		1	
Means & De Garmo			150	8	4	1	1	2	1	11	6	1	1
Mendota Coal Co.:													
Mine No. 2			91	42		10				52		4	
Mine No. 7			136	18	13	4	3	2	2	24	18	1	1
Mine No. 9			136	40	34	7	7	4	4	51	45	4	4
Mo. Mng. Mfg. & Merc. Co			156	30	20	5	2	5	2	40	24	2	1
Moore Coal Co			150	2	1					2	1		
Robbins, J. A			112	8		1		1		10			
Rogers Coal Co			184	34	33	4	3	4	4	42	40	5	5
Seavey & Tripplet			90	6	3	1		1		8	3		
Shelton, Wm. E., & Sons			120	5	3					5	3	2	2
Stevens, Americus			100	2	2	1	1	1	1	4	4		
Totals				205	113	34	17	20	14	259	144	20	14

TABLE 4—Continued.

PLATTE COUNTY.

Name of company or person operating.	Powder.		No. days worked, 1909.	Employes.						Total number employes.		No. animals used.	
				Miners.		Other help under ground.		Other help above ground.					
	Kegs consumed	Cost to miners		Winter	Summer	Winter	Summer	Winter	Summer	Winter	Summer	Winter	Summer
Home Riverside Coal Co			236	443	330	80	54	90	73	613	457	43	28
RANDOLPH COUNTY.													
Bowder, John	14	$23		4	2					4	2		
Bradley, D. T	200	400	180	5	3	1	1	1	1	7	5		
Burge Bros	35	61	200	2	2					2	2	1	1
Clark, D. E			250	8	8					8	8	1	1
Cronan, J. M	125	250	140	5	4					5	4	1	1
De Mart & Clam				7	5					7	5		
Diamond Coal Co	150	300	100	10		4				14		2	
Durham, Daniel	100	175	150	5		1				6			
Davidson, D. C	24	41	70	1		1				1	1		
Esry, Andrew	56	112		4						4		1	
Eravi, Joseph	14	24	90	2						2		1	
Goett, P. J	24	48	200	4						4		1	
Jackson & Harris			300	2	5			1	1	3	6		
McKiernan, W. H.	40	80	100	4		1				5			
Mitchell, W. E., C. & M. Co	160	320	235	9	4	2	1	3	1	14	6	1	1
Milburn Bros	75	131	200	3			1			4			
Morris, G. W., & Son	162	324	150	20		20	6	1	1	41	7	2	1
Northern Central Coal Co.:													
Mine No. 2	2,036	4,072	181	135	90			13	13	148	103		
Mine No. 11	1,159	2,318	190	100	85	24	24	11	11	135	120	11	11
O'Toole, Joseph				3						3		1	
Pilkington, John	20	34	70	2						2			
Slaughter, J. M	20	34	100	6	2					6	2		
Smith Heirs													
Vaughn, W. T	377	641		16	6					16	6	4	2
Ward, Henry	65	130	200										
Williams, L. B	100	170	150	4						4		1	
Williams & Rupp	181	362	120			14	8	2	2	16	10	1	1
Totals	5,137	$10,050		361	216	68	41	32	30	461	287	29	19

TABLE 4—Continued.

RALLS COUNTY.

Name of company or person operating.	Powder.		No. days worked, 1909.	Employes.						Total number employes.		No. animals used.	
	Kegs consumed.	Cost to miners		Miners.		Other help under ground.		Other help above ground.		Winter.	Summer.	Winter.	Summer.
				Winter.	Summer	Winter	Summer	Winter.	Summer				
Clark Coal Co.			266	15	12	2	2	1	1	18	15	2	1
Dickson, Joseph				2	1					2	1		
Ralls County Coal Co.			200	15	15	2	2	1	1	18	18	1	1
Smith, Henry, & Son			250	6	2					6	2		
Tighe Coal & Mining Co.			211	15	10	3	2	1	1	19	13	1	1
Totals				53	40	7	6	3	3	63	49	4	3

RAY COUNTY.

Name of company or person operating.	Kegs consumed.	Cost to miners	No. days worked, 1909.	Miners Winter.	Miners Summer	Under ground Winter	Under ground Summer	Above ground Winter.	Above ground Summer	Total Winter.	Total Summer.	Animals Winter.	Animals Summer.
Blair, Hugh			132	6				1	1	7	1		
Brockman, J. C. & A. B			90	1		1				2			
Calnen-Blair Coal Co.			220	20	10	3	2	2	1	25	13	1	1
Central Coal & Coke Co., No. 50			118	70	70	40	40	11	11	121	121	1	1
Clark, Jacob			25	1						1			
Collier, J. W			175	4						4			
Crawford-Wilson Coal Co.			152	50	50	10	10	3	3	63	63	5	5
Doran, John			200	6	3					6	3		
Fowler C. & M. Co.			140	70		12		4		86		4	
Gant, J. M				2						2			
Huston, Fred			100	4						4			
Hymer, O. P.	1	$2		5				1		6			
Loeven, M. J			110	3						3			
Maple Hill Coal Co.			162	25	18	3	3	2	2	30	23	1	1
Martin-Hubbell-Osborne			240	12	12	35	35	15	15	62	62	10	10
McCorkendale, J. R.				6	3					6	3		
McDaniel, J. L.			152	4						4			
Mercantile C. & M. Co.			182	85	24	13	3	3	1	101	28	3	3
Odell, E. R.			100	5				1		6			
Ottman & Nelson			92	7	3	1	1	1	1	9	5		
Pence & Calnen Coal Co.			200	30	30	5	5	4	4	39	39	2	2
Pickering Coal Co.			189	70	70	23	23	6	6	99	99	7	7
Ray County C. B. & T. Co.			230	4	2					4	2		
Rice, Perry				10	2	1		1		12	2		
Richmond & Camden C. Co.			217	150	105	29	29	16	16	195	150	12	12
Ramsey, Robert	2	3	150	6	3					6	3		

TABLE 4—Continued.

RAY COUNTY—Continued.

Name of company or person operating.	Powder.		No. days worked, 1909.	Employes.						Total number employes.		No. animals used.	
	Kegs consumed.	Cost to miners		Miners.		Other help under ground.		Other help above ground.					
				Winter.	Summer	Winter.	Summer	Winter.	Summer	Winter.	Summer.	Winter.	Summer.
Shea, Thos., & Sons			180	8	3	1		1	8	10	11		
Turner & Son			150	5	2	1		1	1	7	3	2	2
Thompson, Geo. W			120	4	1	1		1	1	6	2		
Vibbard Coal Co			158	5	5			2	2	7	7		
Ward, W. O				30	10	5	2	2	1	37	13	1	1
Watson, Jas. N			40	2				1		3			
Woodruff, John	1	$2	90	2	2					2	2		
Totals	4	$7		712	428	184	153	79	74	975	655	49	45
SALINE COUNTY.													
Garver, J. N	4	$9	100	3				1		4			
ST. CLAIR COUNTY.													
Cook, Jas. M			90	2						2			
Collins, J. C			260	4	2	1				5	2		
Greathouse, T. L				4	2					4	2		
Totals				10	4	1				11	4		
SCHUYLER COUNTY.													
Golston, Ira	1	$2	150										
Hymes, J. W													
Long, G. B													
Mock & Grindle			120	10		1		1		12		1	

TABLE 4—Continued.

SULLIVAN COUNTY.

Name of company or person operating.	Powder.		No. days worked, 1909	Employes.						Total number employes.		No. animals used.	
	Kegs consumed	Cost to miners		Miners.		Other help under ground.		Other help above ground.		Winter	Summer	Winter	Summer
				Winter	Summer	Winter	Summer	Winter	Summer				
Milan Coal Co	300	$600	232	16	4	8	2	3	2	27	8	1	

VERNON COUNTY.

Name of company or person operating.	Kegs consumed	Cost to miners	No. days worked, 1909	Miners Winter	Miners Summer	Other help under ground Winter	Other help under ground Summer	Other help above ground Winter	Other help above ground Summer	Total number employes Winter	Total number employes Summer	No. animals used Winter	No. animals used Summer
Brown, A. S				4						4			
Carbon Coal Co	200	$400	40	36	36	7	7	6	6	49	49	2	2
Davis, Jas. P				1						1		2	
Ewing, W. H	10	19											
Flake, J. W	2	4	12	1						1			
Jones Coal Co	1,200	2,400	240	30	30	6	6	9	9	45	45	3	3
Koch, Herman			120	4						4			
Prewitt, Wm. T													
Palmer, D. L													
Tuttle & Neagle			30										
Totals	1,412	$2,823		76	66	13	13	15	15	104	94	7	5

Table 5—Number of Machines, Kind of Machine, Number of Drills, Kind of Drills, Prices Paid Machine Work, Prices Paid Pick Work.

ADAIR COUNTY.

Name of company or person operating.	Labor.		No. machines used.	Kind of machines.	No. drills used.	Machine employes, prices paid.			Prices paid per ton for pick work.		Prices paid other help, per day.	
	Union or non-union.	Local No.				Miners, per ton.	Machine runners, per day.	Machine helpers, per day.	Winter.	Summer.	Winter.	Summer.
Arctic Coal Co	Union	No. 1942							$.72	$.72	$2.56	$2.56
Big Creek Coal Co	Non-union				3				1.01	1.01	2.56	2.56
Consolidated Stahl C. Co	Union	No. 262	2	Goodman		$.58	$2.76	$2.75	.95	.95	2.76	2.76
Great Northern Fuel Co. No. 1	Union								.72			
Great Northern Fuel Co., No. 21	Union								.72	.72		
Great Northern Fuel Co., No. 23	Union											
Hazel Creek Coal Co	Non-union				3				1.00		1.50	
Ivie, J. M., & Sons	Non-union								1.01	1.01		
Kansas City-Midland C. M. Co	Union	No. 1442										
Lee, John	Union	No. 1847									2.56	
Manufacturers' C. & C. Co. No. 1	Union	No. 1847							.72	.72	1.13–3.00	1.13–3.00
Manufacturers' C. & C. Co. No. 4	Union	No. 1847							.72	.72	113.–3.00	1.13–3.00
Manufacturers' C. & C. Co. No. 50	Union	No. 2205							.72	.72	1.13–3.00	1.13–3.00
Rombauer Coal Co	Union	No. 1226							.77	.77	2.02–3.00	2.02–3.00
Star Coal Co	Union	No. 2855							1.05⅓	1.05⅓	2.40	2.40
Totals			2		6							

AUDRAIN COUNTY.

Name of company or person operating.	Union or non-union.	Local No.	No. machines used.	Kind of machines.	No. drills used.	Miners, per ton.	Machine runners, per day.	Machine helpers, per day.	Pick work, Winter.	Pick work, Summer.	Other help, Winter.	Other help, Summer.
Audrain Coal Co	Non-union								$1.02	$1.02	$1.75–2.56	$1.75–2.56
Davidson, W. H	Non-union								1.37½	1.37½	1.50	1.50
Martinsburg Coal Co	Non-union								.86	.86	2.25	2.25
Self & Williams	Non-union								1.50	1.50	2.56	2.56
Lawder-Peterson Coal Co	Non-union		1	Goodman		$.69	$2.75	$2.75			2.56	2.56
Standard C. & M. Co	Non-union								1.25	1.10	2.25	2.25
Totals												

TABLE 5—Continued.

BARTON COUNTY.

Name of company or person operating.	Labor.		No. machines used	Kind of machines.	No. drills used	Machine employes, prices paid.			Prices paid per ton for pick work.		Prices paid other help, per day.	
	Union or non-union.	Local No.				Miners, per ton.	Machine runners, per day.	Machine helpers, per day.	Winter	Summer	Winter	Summer
Betz, Jacob	Non-union									$ .75		$1.50
Cackley, R. E	Non-union											
Clark Bros	Non-union											
Creekmore, W. P	Non-union								$ .80		$1.50	
Correlli Coal Co	Union								.72		2.56	
Davis Coal Co	Union								.72	.72	2.56	2.56
Freedling, W. H												
Geivet, W. H											1.25–2.50	
Lasley, W. B												
Lavery, W. J	Non-union								.80		1.75	
Lawrence, Frank									1.20			
Mulkins, T. E									1.25	1.25		
Orahood, A. J	Non-union											
Orahood, Wm												
Patterson, W. W., Coal Co	Non-union											
Peck & Brummett					3							
Pittsburg Coal Co	Union								.72	.72		
Pittsburg & Midway Coal Co	Union	No. 533							.72	.72	2.02–2.81	2.02–2.81
Pullen & Sons Coal Co									.72	.72	2.02½	2.02½
Stephenson, J. J., Coal Co	Non-union										1.75	1.50
Stone, C. T												
Taylor, R. J												
Wear Coal Co	Union								.72	.72	2.50	2.50
Western C. & M. Co. No. 9	Union								.72	.72	2.50	2.50
Western C. & M. Co. No. 17	Union								.72	.72	2.50	2.50
Totals					3							

BATES COUNTY.

Name of company or person operating.	Union or non-union.	Local No.	No. machines used	Kind of machines.	No. drills used	Miners, per ton.	Machine runners, per day.	Machine helpers, per day.	Winter	Summer	Winter	Summer
Amsterdam Coal Co									$1.00		$1.50	
Atlas Coal M. & M. Co	Union	No. 2717							.62	$ .62	2.02–2.56	$2.02–2.56
Ayer, U												
Baker, Joseph												
Carr Coal M. & M. Co	Union	No. 1224										
Decker, H. W					1				1.00			
Diller, Sam									.75	.75		
Dunkerly Coal Co	Non-union								.72	.72	2.56	2.56

TABLE 5—Continued.

BATES COUNTY—Continued.

Name of company or person operating.	Labor.		No. machines used	Kind of machines.	No. drills used	Machine employes, prices paid.			Prices paid per ton for pick work.		Prices paid other help, per day.	
	Union or non-union.	Local No.				Miners, per ton.	Machine runners, per day.	Machine helpers, per day.	Winter	Summer	Winter	Summer
Fleming Coal Co	Non-union										$1.50	$1.50
Harris, J. A												
Hair, Miller & Bradford									$.72		2.25	
Henley, R. J												
Heckadon, P. L									.72	$.72		
Holland Coal Co	Non-union								.90	.90	2.43	2.43
Johnson, King									.90	.90	2.00	2.00
McClendon, Harry	Non-union								1.00	1.00		
McConnell, W. A., & Sons									.72	.72	2.00	2.00
Metzler & Shelton												
Pearson Bros											1.50	
Peeler, D. D	Non-union											
Ritchie, H. C	Union								.62	.62	1.50	1.50
Scott, Thos. B												
Smalley, J. M									1.25			
Sprague Coal Co									.80			
Tarver, E. R												
Tatley, J. V	Union								.82	.72	2.56	2.56
Wear, Emmet	Union	No. 1226										
Totals					1							

BOONE COUNTY.

Name of company or person operating.	Union or non-union.	Local No.	No. machines used	Kind of machines.	No. drills used	Miners, per ton.	Machine runners, per day.	Machine helpers, per day.	Winter	Summer	Winter	Summer
Davis & Watson	Non-union								$1.00	$1.00	$2.05	$2.05
Davis, Isaak R									1.00	1.00		
McGee, Lonnie			1				$2.00	$1.50				
Prather, W. R	Union								1.01	1.01	2.00	2.00
Shock, R. L									1.00	1.00		
Sutton, W. W	Non-union								1.25	1.25		
Total			1									

TABLE 5—Continued.

Name of company or person operating.	Labor.		No. machines used	Kind of machines.	No. drills used	Machine employes, prices paid.			Prices paid per ton for pick work.		Prices paid other help, per day.	
	Union or non-union.	Local No.				Miners, per ton	Machine runners, per day.	Machine helpers, per day.	Winter	Summer	Winter	Summer
CALDWELL COUNTY.												
Caldwell Coal Co	Non-union								$1.25	$1.25	$125–2.00	$1.25–2.00
CALLAWAY COUNTY.												
Bell, Eli									$1.25		$1.75	
Clark, Geo. W					1				1.31	$1.31	1.25	
Fulton Coal Co	Non-union								1.25	1.25	1.75	$1.75
Fulton Fire Brick Co	Non-union								1.25	1.25	1.50	1.50
Harris & Trigg	Non-union								1.25	1.25	2.00	2.00
Morsinkhoff, John	Non-union								1.25	1.25		
Nickolson, C. M									1.12½	1.12½	1.50	1.50
Reed, J. W	Non-union								1.25	1.25	1.50	1.50
Simmons, J. W									1.25	1.25	1.75	1.75
Skelley, E												
Smith, David												
Sulzer, J. W	Non-union								1.25	1.25		
Total					1							
CARROLL COUNTY.												
Cowan, R. M												
Kenyon, J. A									$1.25		$1.50	
O'dell, James									1.75	$1.50		
Total												
CASS COUNTY.												
Creighton Tile & Coal Co	Non-union								$.97	$.97	$1.50–2.30	$1.25–2.30

TABLE 5—Continued.

CHARITON COUNTY.

Name of company or person operating.	Labor.		No. machines used	Kind of machines.	No. drills used	Machine employes, prices paid.			Prices paid per ton for pick work.		Prices paid other help, per day.	
	Union or non-union.	Local No.				Miners, per ton.	Machine runners, per day.	Machine helpers, per day.	Winter	Summer	Winter	Summer
Collett, Lizzie M												
Dooley, J. A									$1.50	$1.50		
Kahler, W. J												
Kingsley Bros									1.50			
Rothville C. & M'g. Co									1.75			
Strickland, J. C									1.75			
Watson, S. E												
Total												
CLAY COUNTY.												
Missouri City Coal Co	Union	No. 380							$1.11	$1.11	$2.25–2.56	$2.25–2.56
COLE COUNTY.												
Bandelier, S. & A	Non-union										$1.25	$1.25
DADE COUNTY.												
Hickman, O	Non-union								$1.00	$1.00		
Stout, W. A	Non-union								1.00	.87½	$1.50	
Windes, W. H	Non-union								1.00	1.00	2.00	$2.00
GRUNDY COUNTY.												
Trenton Mining Co	Union	No. 2693			20				$1.35	$1.35	$2.56	$2.56

TABLE 5—Continued.

HENRY COUNTY.

Name of company or person operating.	Labor.		No. machines used	Kind of machines.	No. drills used	Machine employes, prices paid.			Prices paid per ton for pick work.		Prices paid other help, per day.	
	Union or non-union.	Local No.				Miners, per ton.	Machine runners, per day.	Machine helpers, per day.	Winter.	Summer.	Winter.	Summer.
Anaconda Coal Co	Union	No. 1073			1				$1.11		$1.40	
Bowen Coal Co	Union	No. 2669							.67	$.67	2.56	$2.56
Brush Coal Co	Union	No. 1073							1.11	1.11	2.56	2.56
Dickey, W. S	Union	No. 1073							.97	.97	2.56	2.56
England, James, Coal Co	Union	No. 1073							1.11	1.11	2.56	2.56
Hughes, W. E	Non-union								.87½		1.50	
Hurst, John, Coal Co	Union	No. 1073			25						2.00–2.56	2.00–2.56
Lane, M. E									1.00	.90	1.50	1.50
Lewis Coal Co	Non-union											
Parks, A. F	Non-union								.80	.80	1.50	1.50
Pharis & Rivers	Non-union				10				1.65	1.50	1.75	1.75
Reese, Wm. D	Union								1.25	1.25		
Rusk, Wm. H	Non-union								1.12½			
Standard Coal Co	Union	No. 1073							1.11	1.11	2.56	2.56
Total					35							
HOWARD COUNTY.												
Collins, W. H	Non-union								$1.50	$1.50		
Pitney, Alexander	Non-union								1.11	1.11	$2.56	$2.56
Pitney, O. S									1.00			
Rohr, O. B									1.75	1.50		
JOHNSON COUNTY.												
Burns, M. F												
Bullock, D. A									$1.50			
Bullock, P. H	Non-union										$1.25	$1.25
Jacobs, W. D					2				2.00	$2.00		
Meily, M. B	Non-union								1.87½	1.50	1.75	1.75
Millard, Frank	Non-union								1.25	1.25	1.50	1.50
McGrath, John											1.00	1.00
Sutherland Coal Co	Union				1				1.75		1.50–2.36	
Total					3							

TABLE 5—Continued.

LAFAYETTE COUNTY.

Name of company or person operating.	Labor.		No. machines used	Kind of machines.	No. drills used	Machine employes, prices paid.			Prices paid per ton for pick work.		Prices paid other help, per day.	
	Union or non-union.	Local No.				Miners, per ton.	Machine runners, per day.	Machine helpers, per day.	Winter	Summer	Winter	Summer
Aull, Edw., Coal Co	Union	No. 171							$1.20	$1.20	$2.56	$2.56
Arnschild, John												
Bell & Greer									1.37½	1.37½	2.56	2.56
Bonanza Coal Co	Union	No. 377							1.18		2.56	
Boedeker Coal Co									1.25	1.25		
Canterbury & Griffith									1.25	1.12	2.56	2.56
Clay, Tom									1.25	1.00	1.50	
Cary, B. F	Non-union								1.25	1.25	2.00	2.00
Corder Coal Co	Union	No. 1400							1.11	1.11	2.56	2.56
Diamond Coal Co., "S. F."	Union	No. 1400							1.11	1.11	2.02–2.56	2.02–2.56
Diamond Coal Co., "Wilson."												
Dover Coal Co	Union								1.11	1.11	2.56	2.56
Duncan, Harvey									1.37	1.37		
Emison, S. G												
Farmers' Coal Co	Union	No. 377	17	Goodman	3	$.67	$2.76	$2.56	1.11	1.11	2.02–2.56	2.02–2.56
Fallman, Ed												
Gann & Bledsoe	Non-union								1.50	1.50		
Hohenwald Bros	Non-union								1.25	1.25		
Independence C. M'g Co	Union	No. 1472							1.11	1.11	2.56	2.56
Kratz & Son	Union	No. 377							1.11			
Labor Exchange No. 305			3	Morgan-Gardner		.76	2.76	2.56	1.30	1.20	2.56	2.56
Lanning-Harris C. & G. Co	Union	No. 1231	6	Goodman		.67	2.76	2.56			2.56	2.56
Martens, Jacob									1.50	1.50		
McGrew Coal Co	Union	No. 1827	14	Goodman		.76	2.76	2.56			2.03–2.56	2.03–2.56
Painter, C. S									1.25		2.00	
Plattenburg Coal Co									1.37	1.25	1.00–2.00	1,00–2.00
Rost, Wm. C									1.50	1.50		
Sebastian, R	Union								1.11	1.11		
Sipe, C. C., & Son									1.37	1.37		
Stolen, Anton	Union	No. 1400							1.33	1.33		
Stoll Bros	Union	No. 377							1.25	1.12	2.36	
Summers, M. W									1.20	1.20		
Tyler, J. W									1.62			
Van Guilder, E. M											2.56	
Waverly Brick & Coal Co	Union	No. 1089							.70	.70	2.02–2.56	2.02–2.56
Western C. & M. Co.:												
South Mine	Union	No. 171	5	Sperry		.67	2.76	2.56			2.02–3.00	2.02–3.00
Summit Mine	Union	No. 171	5	Sperry		.67	2.76	2.56			2.02–3.00	2.00–3.00
Midway Mine	Union	No. 171	6	Sperry		.67	2.76	2.56			2.02–3.00	2.02–3.00
Valley Mine	Union	No. 171	6	Goodman		.67	2.76	2.56	1.11	1.11	2.02–3.00	2.02–3.00

TABLE 5—Continued.

LAFAYETTE COUNTY—Continued.

Name of company or person operating.	Labor.		No. machines used	Kind of machines.	No. drills used	Machine employes, prices paid.			Prices paid per ton for pick work.		Prices paid other help, per day.	
	Union or non-union.	Local No.				Miners, per ton	Machine runners, per day.	Machine helpers, per day.	Winter	Summer	Winter	Summer
Wegener, J. C	Union								$1.25	$1.12		
Whitley, Scott	Non-union								1.30			
Wright, James												
Wright, Sam'l & Frank									1.37		$1.00	
LINN COUNTY.												
Barr, Chas	Union	No. 1875							$1.50	$1.50	$2.56	$2.56
Bucklin Coal Co	Union								1.40	1.40		
Crandall, W. E												
Landreth Coal Co	Union	No. 177							1.32	1.32	2.56	2.56
Marceline C. & M. Co., No. 1	Union	No. 177							1.22	1.22	2.02-2.56	2.02-2.56
Marceline C. & M. Co., No. 2	Union	No. 2143							1.22	1.22	2.02-2.56	2.02-2.56
Sheehan, J. E	Union								1.50	1.50	2.02	2.02
Wine, G. C	Union								1.50	1.50	2.56	2.56
LIVINGSTON COUNTY.												
Cox, Ira B	Non-union								$1.25		$1.25	
Fulwood, Wm	Non-union								1.75	$1.75		
MONITEAU COUNTY.												
Monarch C. & M. Co	Non-union								$1.50			
MONROE COUNTY.												
Gilbert, J. B									$1.75			

TABLE 5—Continued.

MACON COUNTY.

Name of company or person operating.	Labor.		No. machines used	Kind of machines.	No. drills used	Machine employes, prices paid.			Prices paid per ton for pick work.		Prices paid other help, per day.	
	Union or non-union.	Local No.				Miners, per ton	Machine runners, per day.	Machine helpers, per day.	Winter	Summer	Winter	Summer
Badgerow, David	Non-union				2						$2.00	$2.00
Central Coal & Coke Co. No. 25	Union	No. 2744							$.67	$.67	2.02–2.56	2.02–2.56
Central Coal & Coke Co. No. 28	Union	No. 946							.67	.67	2.77	2.77
Central Coal & Coke Co. No. 61	Union	No. 1918							.67	.67	2.02–2.56	2.02–2.56
Central Coal & Coke Co. No. 66	Union	No. 65							.67	.67	2.02–2.56	2.02–2.56
Dennis, J. H	Non-union								1.75	1.38		
Hurd & Hurd					5				1.12	1.12	1.75	1.75
Isaacson & Underwood	Non-union				1						1.75	
James Bros	Union	No. 919							.95	.95	2.56	2.56
Jones, John H	Union	No. 919							.95	.95	2.56	2.56
Lehman, H. A	Non-union								1.00	1.00	2.00	1.50
Lunsford, H. W									1.50			
Northwestern C. & M. Co. No. 8	Union	No. 919							.67	.67	2.56	2.56
Northwestern C. & M. Co. No. 9	Union	No. 919							.67	.67	2.56	2.56
Parry, J. P									.67			
Total					8							
MONTGOMERY COUNTY.												
Biddleman, Wm	Non-union											
Hammitt, C. E	Non-union								$1.37	$1.37	$1.00	
Noel, Buford	Non-union								1.37	1.37	1.50	
Whitehead & Sons	Non-union								1.25	1.25	1.50	$1.50
MORGAN COUNTY.												
Ouachita C. & C. Products Co	Non-union				1							
PLATTE COUNTY.												
Home-Riverside Coal Co	Union								$.95	$.95	$2.02–2.56	$2.02–2.56

TABLE 6 Continued.

PUTNAM COUNTY.

Name of company or person operating.	Labor.		No. machines used	Kind of machines.	No. drills used	Machine employes, prices paid.			Prices paid per ton for pick work.		Prices paid other help, per day.	
	Union or non-union.	Local No.				Miners, per ton	Machine runners, per day.	Machine helpers, per day.	Winter	Summer	Winter	Summer
Baugher, A. W									$1.05			
Hawkins, John												
Humphreys, Richard									1.00			
Jones, Geo. F									1.12			
Means & De Garmo	Non-union								1.05	$1.05	$1.50	$1.50
Mendota Coal Co.:												
Mine No. 2	Union	No. 783							.91	.91	1.90-2.56	1.90-2.56
Mine No. 7	Union	No. 783							.91	.91	1.90-2.56	1.90-2.56
Mine No. 9	Union	No. 783							.91	.91	1.90-2.56	1.90-2.56
Mo. Mng., Mfg. & Merc Co	Union	No. 783							.91	.91	1.90-2.56	1,90-2.56
Moore Coal Co	Non-union								1.25	1.25		
Robbins, J. A									1.00		1.00	
Rogers Coal Co	Union	No. 783							.91	.91	1.90-2.56	1.90-2.56
Seavey & Tripplet	Non-union								1.00	1.00		
Shelton, Wm. E., & Sons	Non-union								1.00	1.00		
Stevens, Americus									1.05	1.05	1.25	1.25
RALLS COUNTY.												
Clark Coal Co	Union								$1.07	$1.07	$2.75	$2.56
Dickson, Joseph									1.07	1.07		
Ralls County Coal Co	Union								1.02	1.02		
Smith, Henry, & Son	Union	No. 742							1.50	1.50		
Tighe Coal & Mining Co	Union	No. 724							1.07	1.07	2.56	2.56
RANDOLPH COUNTY.												
Bowder, John									$1.25			
Bradley, D. T	Union				4				.95	$.95	$2.56	$2.56
Burge Bros	Union	No. 1135							.95	.95		
Clark, D. E									.67	.67	2.56	2.56
Cronan, J. M	Non-union								1.00	1.00	2.56	2.56
De Mart & Clam									.70	.70		
Diamond Coal Co	Union	No. 1135							.67		2.36-2.56	
Durham, Daniel	Non-union				2				1.00			

TABLE 5—Continued.

RANDOLPH COUNTY—Continued.

Name of company or person operating.	Labor.		No. machines used	Kind of machines.	No. drills used	Machine employes, prices paid.			Prices paid per ton for pick work.		Prices paid other help per day.	
	Union or non-union.	Local No.				Miners, per ton	Machine runners, per day	Machine helpers, per day	Winter	Summer	Winter	Summer
Davidson, D. C	Union	No. 149			1				$1.12			
Eary, Andrew									.95		$2.56	
Eravi, Joseph									1.25			
Goett, P. J	Union	No. 149							1.00			
Jackson & Harris	Non-union								1.00	$1.00	1.50–2.56	$1.50–2.56
McKiernan, W. H.									.95		2.56	
Mitchell, W. E., C. & M. Co	Union	No. 1135							.67	.67	1.00	1.00
Milburn Bros	Union								.50		1.50	
Morris, G. W., & Son	Union								.95	.95	2.56	2.56
Northern Central Coal Co:												
Mine No. 2	Union		7	Sullivan		$.45			.67	.67	2.36–2.56	2.36–2.56
Mine No. 11	Union	No. 954	9	Sullivan		.45			.67	.67	2.36–2.56	2.36–2.56
O'Toole, Joseph											2.00	
Pilkington, John	Union	No. 149							1.00		2.56	
Slaughter, J. M	Non-union								1.01	1.01		
Smith Heirs												
Vaughan, W. T									1.00	1.00		
Ward, Henry	Union	No. 149							1.05		2.50	
Williams, L. B	Non-union								1.00			
Williams & Rupp									.95	.95	2.56	2.56
Totals			16		7							
RAY COUNTY.												
Blair, Hugh	Non-union								$1.25		$2.00	$2.00
Brockman, J. C. & A. B									1.00			
Calnen-Blair Coal Co	Union								1.11	$1.11	2.56	2.56
Central Coal & Coke No. 50	Union	No. 947	5	Goodman		$67	$276	$2.56	1.11	1.11		
Clark, Jacob									1.50			
Collier, J. W									1.50			
Crawford-Wilson Coal Co	Union								1.11	1.11	2.56	2.56
Doran, John									1.50	1.50		
Fowler C. & M. Co	Union	No. 298							1.11		2.56	
Gant, J. M									1.50			
Huston, Fred									1.50			
Hymer, O. P									1.25		1.50	
Loeven, M. J									1.50			

TABLE 5—Continued.

RAY COUNTY—Continued.

Name of company or person operating.	Labor.		No. machines used	Kind of machines.	No. drills used	Machine employes, prices paid.			Prices paid per ton for pick work.		Prices paid other help, per day.	
	Union or non-union.	Local No.				Miners, per ton.	Machine runners, per day.	Machine helpers, per day.	Winter	Summer	Winter	Summer
Maple Hill Coal Co	Union	No. 1874							$1.11	$1.11	$2.56	$2.56
Martin-Hubbell-Osborne	Union		3	Morgan & Gardner		$.67	$2.76	$2.56	1.11	1.11	2.56	2.56
McCorkendale, J. R									1.75	1.75	1.50	1.50
McDaniel, J. L									1.25	1.25		
Mercantile C. & M. Co	Union	No. 298							1.11	1.11	2.56	2.56
Odell, E. R									1.50		1.25	
Ottman & Nelson	Union	No. 298							1.11	1.11	2.56	2.56
Pence & Calnen Coal Co	Union	No. 298							1.11	1.11	2.56	2.56
Pickering Coal Co	Union								1.11	1.11	2.56	2.56
Ray County C., B. & T. Co									1.50	1.50	1.75	1.75
Rice, Perry	Union	No. 298							1.11	1.11	2.56	
Richmond & Camden C. Co	Union	No. 298							1.11	1.11	2.56	2.56
Ramsey, Robert									1.50	1.50	2.00	2.00
Shea, Thos. & Sons									1.12		2.56	
Turner & Son	Union								1.11	1.11	2.56	2.56
Thompson, Geo. W	Non-union								1.11	1.11	2.25	1.00
Vibbard Coal Co	Union								1.11	1.11	1.50–2.50	1.50–2.50
Ward, W. O	Union	No. 298			1				1.11	1.11	2.56	2.56
Watson, Jas. N	Union	No. 298							1.11		2.56	
Woodruff, John									1.50	1.50		
Totals			8		1							
SALINE COUNTY.												
Garver, J. N	Non-union				1				$1.50		$1.00	
ST. CLAIR COUNTY.												
Cook, Jas. M												
Collins, J. C									$1.60	$1.60	$1.50–2.00	
Greathouse, T. L									1.25	1.25		

TABLE 5—Continued.

SCHUYLER COUNTY.

Name of company or person operating.	Labor.		No. machines used	Kind of machines.	No. drills used	Machine employes, prices paid.			Prices paid per ton for pick work.		Prices paid other help, per day.	
	Union or non-union.	Local No.				Miners, per day.	Machine runners, per day.	Machine helpers, per day.	Winter	Summer	Winter	Summer
Golston, Ira			1									
Hymes, J. W									$1.25			
Long, G. B									1.25			
Mock & Grindle									1.00		$1.50	
Watson, Jesse									1.00			
Total			1									

SULLIVAN COUNTY.

Name of company or person operating.	Union or non-union.	Local No.	No. machines used	Kind of machines.	No. drills used	Miners, per day.	Machine runners, per day.	Machine helpers, per day.	Winter	Summer	Winter	Summer
Milan Coal Co					8				$1.37	$1.37	$2.56	$2.56

VERNON COUNTY.

Name of company or person operating.	Union or non-union.	Local No.	No. machines used	Kind of machines.	No. drills used	Miners, per day.	Machine runners, per day.	Machine helpers, per day.	Winter	Summer	Winter	Summer
Brown, A. S									$.75			
Carbon Coal Co	Union	No. 902							.62	$.62	$2.52	$2.52
Davis, Jas. P												
Ewing, W. H											1.50	
Flake, J. W												
Jones Coal Co	Union	No. 902							.62	.62	2.56	2.56
Koch, Herman											1.00	
Prewitt, Wm. T												
Palmer, D. L												
Tuttle & Neagle												

Table 6—Tons of Coal Mined, Price Received at Mines, Total Value of Product, Shipped by Rail, Sold Locally, Used at Mines, Consumed by Miners, Used by Railroads, Name of Railroad.

ADAIR COUNTY.

Name of company or person operating.	Total tons of coal mined in 1909	Tons of coal mined by		Price per ton received at mines	Total value of all coal mined in 1909	Coal, how disposed of.				Is coal used by railroad	Name of railroad company.
		Pickwork	Machines			Shipped by rail	Sold locally	Used at mines	Consumed by miners		
Arctic Coal Co	4,500	4,500		$2.00	$9,000	100	4,400			No	
Big Creek Coal Co	1,302	1,302		1.75	2,278		1,000	302		No	
Consolidated Stahl Coal Co	22,274	3,337	18,937	1.76	39,202	21,289	265	443	277	No	
Great Northern Fuel Co.:											
Mine No. 1	14,911	14,911		1.40	20,875	91,200					
Mine No. 21	30,270	30,270		1.40	42,378			5,881			
Mine No. 23	51,900	51,900		1.40	72,660						
Hazel Creek Coal Co	1,200	1,200		1.75	2,100		1,200			No	
Ivie, J. M., & Sons	2,000	2,000		2.00	4,000		1,950	50			
Kansas City-Midland C. & M. Co	93,000	93,000		1.40	130,200	90,000		1,000	2,000	Yes	C., B. & Q.
Lee, John	1,000	1,000		1.75	1,750		1,000				
Manufacturers' Coal & Coke Co.:											
Mine No. 1	60,669	60,669		2.00	121,338	60,000		269	400	Yes	C., B. & Q.
Mine No. 4	62,744	62,744		1.40	87,842	62,500		244		Yes	C., B. & Q.
Mine No. 50	22,464	22,464		1.40	31,450	22,000		164	300	Yes	C., B. & Q.
Rombauer Coal Co	193,994	119,637	74,357	1.48	288,041	189,484		3,358	1,152	Yes	C., B. & Q. and Q., O., K. C. & St. P., M. & O.
Star Coal Co	2,100	2,100		2.15	4,515		2,100				
Totals	564,328	471,034	93,294	$1.66	$857,629	536,573	11,915	11,711	4,129		

AUDRAIN COUNTY.

Name of company or person operating.	Total tons of coal mined in 1909	Pickwork	Machines	Price per ton received at mines	Total value of all coal mined in 1909	Shipped by rail	Sold locally	Used at mines	Consumed by miners	Is coal used by railroad	Name of railroad company.
Audrain Coal Co	20,967	20,967		$1.75	$36,749	17,375	2,869	180	543	Yes	C. & A.
Davidson, Henry W	543	543		2.00	1,086		523		20	No	
Lowder-Peterson Coal Co	3,220		3,220	2.00	6,440	2,020	980	220		Yes	C. & A.
Martinsburg Coal Co	2,319	2,319		1.70	3,942	1,546	773			Yes	Wabash.
Self & Williams	610	610		2.25	1,372		610			No	
Standard C. & M. Co	5,677	5,677		2.25	12,750	600	5,077			No	
Totals	33,336	30,116	3,220	$1.97	$62,339	21,541	10,832	400	563		

TABLE 6—Continued.

BARTON COUNTY.

Name of company or person operating.	Total tons of coal mined in 1909	Tons of coal mined by Pickwork	Tons of coal mined by Machines	Price per ton received at mines	Total value of all coal mined in 1909	Coal, how disposed of. Shipped by rail	Coal, how disposed of. Sold locally	Coal, how disposed of. Used at mines	Coal, how disposed of. Consumed by miners	Is coal used by railroad	Name of railroad company.
Betz, Jacob	290	290		$1.75	$507		290			No	
Cackley, R. E	240	240		1.50	360		240			No	
Clark Bros	150	150		2.50	375		150			No	
Creekmore, W. P	75	75		1.75	131		75			No	
Correlli Coal Co	1,500	1,500		1.60	2,400	1,375		75	50	No	
Davis Coal Co	4,800	4,800		1.15	5,520	4,800				No	
Friedling, W. H											
Geivet, W. H	460	460		1.50	690		460			No	
Lasley, W. B	4,500	4,500		1.44	6,500	4,500					
Lavery, W. J	330	330		2.00	660	100	220		10	No	
Lawrence, Frank	100	100		1.75	175		100			No	
Mulkins, T. E	80	80		1.50	120		65		15		
Orahood, A. J	101	101		2.50	252		95		6		
Orahood, Wm	61	61		2.50	153		61				
Patterson, W. W., Coal Co	5,928	5,928		1.45	8,600	5,560	368			No	
Peck & Brummett	60	60		2.50	150		57	3			
Pittsburg Coal Co	2,797	2,797		1.50	4,195		2,697	100		No	
Pittsburg & Midway Coal Co	71,801	71,801		1.48	106,265	70,395		1,200	206	Yes	Frisco.
Pullen & Sons Coal Co	6,115	6,115		1.40	8,561	5,863		202	50	No	
Stephenson, J. J., Coal Co	6,605	6,605		1.40	9,320	6,605				No	
Stone, C. T	400	400		1.50	600		400				
Taylor, R. J	66	66		1.50	99		65	1			
Wear Coal Co	33,075	33,075		1.34	44,340	30,760		1,800	515	Yes	Frisco.
Western C. & M. Co:											
Mine No. 9	14,381	14,381		1.24	17,890	13,831		500	50	Yes	Mo. Pac.
Mine No. 17	63,086	63,086		1.24	78,479	60,873		2,000	213	Yes	Mo. Pac.
Totals	217,001	217,001		$1.66	$296,342	204,662	5,343	5,881	1,115		

BATES COUNTY.

Name of company or person operating.	Total tons of coal mined in 1909	Tons of coal mined by Pickwork	Tons of coal mined by Machines	Price per ton received at mines	Total value of all coal mined in 1909	Coal, how disposed of. Shipped by rail	Coal, how disposed of. Sold locally	Coal, how disposed of. Used at mines	Coal, how disposed of. Consumed by miners	Is coal used by railroad	Name of railroad company.
Amsterdam Coal Co	300	300		$1.75	$525	175	110	15		No	
Atlas Coal M. & M. Co	53,225	53,225		1.45	77,176	51,100	300	1,550	275	Yes	Frisco.
Ayer, U	770	770		1.40	800	770					
Baker, Jos	200	200		2.00	400		200				
Carr Coal M. & M. Co	6,000	6,000		1.75	10,500	1,500	4,000	500		Yes	Mo. Pac.
Decker, H. W	56	56		1.75	98		56				

TABLE 6—Continued.

BATES COUNTY—Continued.

Name of company or person operating.	Total tons of coal mined in 1909...	Tons of coal mined by		Price per ton received at mines..	Total value of all coal mined in 1909............	Coal, how disposed of.				Is coal used by railroad............	Name of railroad company.
		Pickwork..	Machines...			Shipped by rail.........	Sold locally..	Used at mines	Consumed by miners.....		
Diller, Sam....................	300	300	....	$2.00	$600	....	300	....	....	.....	
Dunkerly Coal Co............	18,000	18,000	....	2.00	36,000	17,800	200	....	....	Yes.	K. C. S.
Fleming Coal Co............	2,000	2,000	....	1.50	3,000	2,000	....	....	....	Yes.	Mo. Pac.
Harris, J. A....................	2,200	2,200	....	1.25	2,760	2,200	....	....	....	.....	
Hair, Miller & Bradford..........	200	....	200	2.00	400	100	100	....	....	.....	
Henley, R. J....................	85	85	....	1.75	150	....	75	....	10	.....	
Heckadon, P. L..................	4,500	4,500	....	1.80	8,100	4,500	....	....	....	.....	
Holland Coal Co..............	11,583	11,583	....	1.80	20,849	11,083	50	400	50	No..	
Johnson, King..................	620	....	620	1.75	1,085	600	20	....	....	No..	
McClendon, Harry............	811	811	....	2.00	1,622	....	811	....	....	No..	
McConnell, W. A., & Sons..........	2,050	2,050	....	1.85	3,793	1,940	75	10	25	No..	
Metzler & Shelton..............	1,225	1,225	....	1.75	2,143	1,175	50	....	....	No..	
Pearson Bros..................	800	800	....	1.50	1,200	....	800	....	....	.....	
Peeler, D. D..................	400	400	....	2.00	800	....	400	....	....	No..	
Ritchie, H. C..................	6,000	6,000	....	1.75	10,500	3,000	3,000	....	....	.....	
Scott, Thos. B..................	500	500	....	1.75	875	200	300	....	....	.....	
Smalley, J. M..................	400	400	....	1.75	700	....	400	....	....	.....	
Sprague Coal Co..............	812	812	....	1.65	1,340	172	640	....	....	.....	
Tarver, E. R..................	900	900	....	1.30	1,170	....	900	....	....	.....	
Tatley, J. V..................	3,737	3,737	....	1.60	5,979	3,737	....	....	....	.....	
Wear, Emmett..................	....	....	....	.....	....	....	....	....	....	.....	
Totals..........................	117,674	116,854	820	$1.71	$192,565	102,052	12,787	2,475	360		

BOONE COUNTY.

Name of company or person operating.	Total tons of coal mined in 1909...	Pickwork..	Machines...	Price per ton received at mines..	Total value of all coal mined in 1909............	Shipped by rail.........	Sold locally..	Used at mines	Consumed by miners.....	Is coal used by railroad............	Name of railroad company.
Davis & Watson..................	8,726	8,726	....	$2.00	$17,452	....	8,726	....	....	.....	
Davis, Isaak R..................	1,040	1,040	....	1.65	1,716	....	1,040	....	....	.....	
McGee, Lonnie..................	1,200	1,200	....	2.25	2,700	....	1,200	....	....	.....	
Prather, W. R..................	5,960	5,960	....	2.00	11,920	....	5,960	....	....	.....	
Shock, R. L....................	800	800	....	1.75	1,400	....	800	....	....	.....	
Sutton, W. C..................	2,000	2,000	....	2.00	4,000	....	2,000	....	....	.....	
Totals..........................	19,726	19,726	....	$1.94	$39,188	....	19,726	....	....		

TABLE 6—Continued.

CALDWELL COUNTY.

Name of company or person operating.	Total tons of coal mined in 1909	Tons of coal mined by		Price per ton received at mines	Total value of all coal mined in 1909	Coal, how disposed of.				Is coal used by railroad	Name of railroad company.
		Pickwork	Machines			Shipped by rail	Sold locally	Used at mines	Consumed by miners		
Caldwell Coal Co	7,815	7,815		$2.50	$19,537	4,686	2,054	1,000	75	No	

CALLAWAY COUNTY.

Name of company or person operating.	Total tons of coal mined in 1909	Pickwork	Machines	Price per ton received at mines	Total value of all coal mined in 1909	Shipped by rail	Sold locally	Used at mines	Consumed by miners	Is coal used by railroad	Name of railroad company.
Bell, Eli	76	76		$2.00	$152		75	1			
Clark, Geo. W	360	360		2.25	810		360				
Fulton Coal Co	7,812	7,812		2.00	15,624		7,699	113			
Fulton Fire Brick Co	6,500	6,500		1.75	11,375		6,300	200			
Harris & Trigg	2,400	2,400		2.25	5,400		2,320	80			
Morsinkhoff, John	300	300		2.00	600		300				
Nickolson, C. M	1,600	1,600		2.12	3,400		1,600				
Reed, J. F	2,497	2,497		2.50	6,242		2,497				
Simmons, J. W	6,446	6,446		2.25	14,503		6,446				
Skelley, E	1,600	1,600		1.12	1,792		1,600				
Smith, David	2,400	2,400		2.25	5,400		2,400				
Sulzer, J. W	500	500		2.00	1,000		500				
Totals	32,491	32,491		$2.04	$66,298		32,097	394			

CARROLL COUNTY.

Name of company or person operating.	Total tons of coal mined in 1909	Pickwork	Machines	Price per ton received at mines	Total value of all coal mined in 1909	Shipped by rail	Sold locally	Used at mines	Consumed by miners	Is coal used by railroad	Name of railroad company.
Cowan, R. M	100	100		$2.50	$250		94		6		
Kenyon, J. A	750	750		2.50	1,875		750				
Odell, James	360	360		2.50	900		360				
Totals	1,210	1,210		$2.50	$3,025		1,204		6		

CASS COUNTY.

Name of company or person operating.	Total tons of coal mined in 1909	Pickwork	Machines	Price per ton received at mines	Total value of all coal mined in 1909	Shipped by rail	Sold locally	Used at mines	Consumed by miners	Is coal used by railroad	Name of railroad company.
Creighton Tile & Coal Co	7,500	7,500		$2.00	$15,000	6,000	1,000	300	200	Yes	K. C., C. & S.

TABLE 6—Continued.

Name of company or person operating.	Total tons of coal mined in 1909...	Tons of coal mined by		Price per ton received at mines..	Total value of all coal mined in 1909............	Coal, how disposed of.				Is coal used by railroad............	Name of railroad company.
		Pickwork..	Machines...			Shipped by rail........	Sold locally..	Used at mines	Consumed by miners.....		
CHARITON COUNTY.											
Collett, Lizzie M.	40	40		$2.00	$80		40				
Dooley, J. A.	225	225		2.50	563		225				
Kahler, W. J	12	12		2.00	24		12				
Kingsley Bros	120	120		2.25	270		120				
Rothville C. & M. Co	360	360		3.00	1,080		344	16			
Strickland, J. C.	240	240		2.75	660		240				
Watson, S. E.	10	10		2.00	20				10		
Totals	1,007	1,007		$2.36	$2,697		981	16	10		
CLAY COUNTY.											
Missouri City Coal Co	44,500	44,500		$1.80	$80,660	36,400	7,200	900		Yes.	Wabash.
COLE COUNTY.											
Bandelier, S. & A.	2,466	2,466		$2.00	$4,932	2,376	85	5		No..	
DADE COUNTY.											
Hickman, O.	1,800	1,800		$1.75	$3,150	300	1,400	50	50	No..	
Stout, W. A.	1,792	1,792		1.75	3,136	224	1,520	8	40	No..	
Windes, W. H.	2,000	2,000		1.75	3,500		2,000			No..	
Totals	5,592	5,592		$1.75	$9,786	524	4,920	58	90		
GRUNDY COUNTY.											
Trenton Mining Co	9,869	9,869		$3.10	$30,624		9,869				

TABLE 6—Continued.

HENRY COUNTY.

Name of company or person operating.	Total tons of coal mined in 1909	Tons of coal mined by		Price per ton received at mines	Total value of all coal mined in 1909	Coal, how disposed of.				Is coal used by railroad	Name of railroad company.
		Pickwork	Machines			Shipped by rail	Sold locally	Used at mines	Consumed by miners		
Anaconda Coal Co	46	46		$2.50	$123		26		20		
Bowen Coal Co	216,293	216,293		1.52	328,765	208,218	4,025	1,500	2,550	Yes	C., R. I. & P.
Brush Coal Co	11,400	11,400		2.25	25,650	11,220		120	60	No	
Dickey, W. S	14,450	14,450		1.87	27,021		14,090	360		No	
England, James, Coal Co	5,810	5,810		2.05	11,911	225	5,485	100		No	
Hughes, W. E	1,610	1,610		2.00	3,220		1,610				
Hurst Coal Co	11,980	11,980		2.00	23,960	11,980				Yes	Frisco.
Lane, M. E	1,630	1,630		2.25	3,665	980	650				
Lewis Coal Co	7,500		7,500	2.00	16,000	6,400	100	1,000		No	
Parks, A. F	5,200	5,200		2.00	10,400	5,200				No	
Pharis & Rivers	900	900		2.50	2,250		790	50	60	No	
Reese, Wm	160	160		2.25	360		160			No	
Rusk, W. H	575	575		2.50	1,437		575			No	
Standard Coal Co	2,200	2,200		2.25	4,950	1,200	914	24	62		
Totals	279,754	272,254	7,500	$2.13	$459,712	245,423	28,425	3,154	2,752		

HOWARD COUNTY.

Name of company or person operating.	Total tons of coal mined in 1909	Pickwork	Machines	Price per ton received at mines	Total value of all coal mined in 1909	Shipped by rail	Sold locally	Used at mines	Consumed by miners	Is coal used by railroad	Name of railroad company.
Collins, W. H	25	25		$2.50	$63		25				
Pitney, Alexander	200	200		1.50	300	50	150				
Pitney, O. S	160	160		2.25	360		160				
Rohr, O. B	226	226		2.50	565		220	2	4		
Totals	611	611		$2.19	$1,288	50	555	2	4		

JOHNSON COUNTY.

Name of company or person operating.	Total tons of coal mined in 1909	Pickwork	Machines	Price per ton received at mines	Total value of all coal mined in 1909	Shipped by rail	Sold locally	Used at mines	Consumed by miners	Is coal used by railroad	Name of railroad company.
Burns, M. F	120	120		$2.50	$300		120				
Bullock, D. A	100	100		1.75	175		100				
Bullock, P. H	880	880		2.00	1,760		880				
Jacobs, W. D	76	76		3.00	228		76				
Melly, M. B	720	720		3.00	2,160		720				
Millard, Frank	3,000	3,000		1.75	5,250		3,000				

TABLE 6—Continued.

JOHNSON COUNTY—Continued.

Name of company or person operating.	Total tons of coal mined in 1909...	Tons of coal mined by		Price per ton received at mines..	Total value of all coal mined in 1909..........	Coal, how disposed of.				Is coal used by railroad...........	Name of railroad company.
		Pickwork..	Machines...			Shipped by rail.......	Sold locally..	Used at mines	Consumed by miners.....		
McGrath, John	160	160		$2.50	$360		160				
Sutherland Coal Co	1,500	1,500		2.50	3,750	500	880	120			
Totals	6,556	6,556		$2.37	$13,983	500	5,936	120			
LAFAYETTE COUNTY.											
Aull, Edward, Coal Co.	11,119	11,119		$1.85	$19,241	10,368	384	367		No	
Arnschild, John	120	120		2.50	300		120				
Bell & Greer	7,500	7,500		2.67	20,025		7,500				
Bonanza Coal Co	4,423	4,423		2.25	9,952	4,357			66	No	
Boedeker Coal Co	1,400	1,400		2.50	3,500		1,400				
Canterbury & Griffith	3,373	3,373		2.00	6,746		3,373				
Clay, Tom	1,000	1,000		2.50	2,500		1,000				
Cary, B. F	15,000	15,000		2.25	33,750	9,350	5,650				
Corder Coal Co	1,725	1,725		2.00	3,881	1,300	425				
Diamond Coal Co	36,233	36,233		2.08	75,364	34,536	1,169	528			
Dover Coal Co	3,600	3,600		2.25	8,100	2,500	400	400	300	No	
Duncan, Harvey	537	537		2.25	1,209		530	7			
Emison, S. G	160	160		1.25	200		160				
Farmers' Coal Co	58,790	390	58,400	2.54	149,326	54,730		2,680	1,380	No	
Fallman, Ed	100	100		2.25	225		100				
Gann & Bledsoe	600	600		2.50	1,500		600				
Hohenwald Bros	928	928		2.38	2,217		928				
Independence Coal Co	4,875	4,875		2.25	10,968	3,625	500	500	250	No	
Kratz & Son	100	100		2.00	200		100				
Labor Exchange No. 305	13,420		13,420	1.90	25,498	12,062	532	522	304	No	
Lanning-Harris C. & G. Co	29,064		29,064	2.00	58,128	26,410	471	1,431	752	Yes	Mo. Pac.
Martens, Jacob	125	125		2.25	281		125				
McGrew Coal Co	86,288		86,288	1.97	170,102	83,766		2,102	420	No	
Painter, C. S	750	750		2.25	1,687		750				
Plattenburg Coal Co	5,707	5,707		2.25	15,000		5,707				
Rost, Wm	205	205		2.50	513		195	4	6	No	
Sebastian, R	3,689	3,689		2.00	7,378	3,090		599			
Sipe, C. C., & Son	5,736	5,736		2.75	15,774		5,736				
Stolen, Anton	1,662	1,662		2.37	3,939		1,652		10		

TABLE 6—Continued.

LAFAYETTE COUNTY—Continued.

Name of company or person operating.	Total tons of coal mined in 1909...	Tons of coal mined by		Price per ton received at mines..	Total value of all coal mined in 1909............	Coal, how disposed of.				Is coal used by railroad............	Name of railroad company.
		Pickwork..	Machines...			Shipped by rail.........	Sold locally..	Used at mines	Consumed by miners......		
Stoll Bros..........................	2,400	2,400	....	$2.25	$5,400	....	2,400	....	....	.....	
Summers, M. W..........................	800	800	....	2.50	2,000	....	800	....	....	.....	
Tyler, J. W..........................	150	150	....	2.50	375	....	150	....	....	.....	
Van Guilder, E. M..........................	2,428	2,428	....	2.05	4,952	2,406	....	10	12	No..	
Waverly Brick and Coal Co..........................	30,000	30,000	....	1.75	52,500	27,900	1,500	600	....	Yes.	Mo. Pac.
Western C. & M. Co.:											
South Mine..........................	58,312	....	58,312	1.54	90,092	56,362	141	1,667	142	Yes.	Mo. Pac.
Summit Mine..........................	112,584	....	112,584	1.54	173,942	108,919	72	1,382	2,211	Yes.	Mo. Pac.
Midway Mine..........................	114,144	....	114,144	1.54	176,353	109,125	6	4,671	342	Yes.	Mo. Pac.
Valley Mine..........................	102,970	4,800	98,170	1.54	159,089	102,113	....	818	39	Yes.	Mo. Pac.
Wegener, J. C..........................	1,233	1,233	....	2.25	2,774	27	1,206	....	....	.....	
Whitley, Scott..........................	300	300	....	2.50	750	....	300	....	....	.....	
Wright, Sam'l & Frank..........................	560	560	....	2.25	1,260	....	560	....	....	.....	
Totals..........................	724,110	153,728	570,382	$2.16	$1,316,991	652,946	46,642	18,288	6,234		
LINN COUNTY											
Barr, Chas..........................	3,000	3,000	....	$2.75	$8,250	....	3,000	....	....	.....	
Bucklin Coal Co..........................	900	900	....	2.25	2,025	....	900	....	....	.....	
Crandall, W. E..........................	3,447	3,447	....	2.75	9,380	....	3,447	....	....	.....	
Landreth Coal Co..........................	4,000	4,000	....	2.75	11,000	....	4,000	....	....	.....	
Marceline C. & M. Co..........................	117,898	117,898	....	2.09	245,603	109,844	6,257	1,797	....	Yes.	A., T. & S. F.
Sheehan, J. E..........................	1,730	1,730	....	2.75	4,757	....	1,730	....	....	.....	
Wine, G. C..........................	1,835	1,835	....	2.75	5,046	....	1,835	....	....	.....	
Totals..........................	132,810	132,810	....	$2.58	$286,061	109,844	21,169	1,797	....		
LIVINGSTON COUNTY.											
Cox, Ira B..........................	500	500	....	$2.00	$1,000	....	500	....	....	.....	
Fulwood, Wm..........................	235	235	....	3.00	700	....	225	10	....	.....	
Totals..........................	735	735	....	$2.50	$1,700	....	725	10	....		

TABLE 6—Continued.

MACON COUNTY.

Name of company or person operaiing.	Total tons of coal mined in 1909...	Tons of coal mined by		Price per ton received at mines..	Total value of all coal mined in 1909...........	Coal, how disposed of.				Is coal used by railroad..........	Name of railroad company.
		Pickwork..	Machines...			Shipped by rail.........	Sold locally..	Used at mines	Consumed by miners.....		
Badgerow, David	1,796	1,796	....	$1.50	$2,694	....	1,796	....	....	.....	
Central Coal & Coke Co.:											
Mine No. 25	159,031	159,031	....	1.40	222,643	157,768	....	951	312	Yes.	Mo. & La., C., R. I. & P. and Burlington.
Mine No. 28	69,077	69,077	....	1.40	96,708	67,661	....	1,318	98	Yes.	Mo. & La., C., R. I. & P. and Burlington.
Mine No. 61	218,171	218,171	....	1.40	305,439	213,207	45	4,119	800	Yes.	Mo. & La. and Burlington.
Mine No. 66	128,991	128,991	....	1.40	180,587	127,965	....	800	226	Yes.	Mo. & La., C., R. I. & P. and Burlington.
Dennis, J. H	1,696	1,696	....	2.50	4,240	32	1,644	....	20	.....	
Hurd & Hurd	1,200	1,200	....	1.75	2,100	....	1,200	....	....	.....	
Isaacson & Underwood	235	235	....	1.65	388	....	235	....	....	.....	
James Bros	3,105	3,105	....	2.00	6,210	....	3,105	....	....	.....	
Jones, John H	2,541	2,541	....	2.00	5,082	....	2,541	....	....	.....	
Lehman, H. A	600	600	....	1.25	750	....	584	....	16	.....	
Lunsford, H. W	600	600	....	2.50	1,500	....	573	....	27	.....	
Northwestern C. & M. Co.:											
Mine No. 8	181,631	181,631	....	1.42	258,090	178,497	376	1,791	967	Yes.	C., B. & Q.
Mine No. 9	45,632	45,632	....	1.42	64,830	44,772	2	858	....	Yes.	C., B. & Q.
Parry, J. P	2,000	2,000	....	1.50	3,000	....	2,000	....	....	.....	
Totals	816,306	816,306	....	$1.67	$1,154,261	789,902	14,101	9,837	2,466		

MONITEAU COUNTY.

Monarch Coal & Mineral Co	1,792	1,792	....	$2.62	$4,695	380	1,087	300	25	No..	

MONROE COUNTY.

Gilbert, J. B	450	450	....	$2.50	$1,125	....	445	....	5	No..	

TABLE 6—Continued.

Name of company or person operating.	Total tons of coal mined in 1909...	Tons of coal mined by		Price per ton received at mines..	Total value of all coal mined in 1909..........	Coal, how disposed of.				Is coal used by railroad..........	Name of railroad company.
		Pickwork..	Machines...			Shipped by rail........	Sold locally..	Used at mines	Consumed by miners.....		
MONTGOMERY COUNTY.											
Biddleman, Wm........................	208	208	....	$2.50	$520	....	208	....	....	No..	
Hammett, C. E........................	120	120	....	2.25	270	....	120	....	....	No..	
Noel, Buford........................	1,000	1,000	....	2.50	2,500	....	1,000	....	....	No..	
Whitehead & Sons........................	1,500	1,500	....	2.25	3,375	....	1,500	....	....	....	
Totals........................	2,828	2,828	....	$2.38	$6,665	....	2,828	....	....		
MORGAN COUNTY.											
Ouachita C. & C. Products Co...........	1,680	1,680	....	$2.50	$4,200	....	....	1,680	....	....	
PUTNAM COUNTY.											
Baugher, A. W........................	175	175	....	$1.25	$219	....	175	....	....	No..	
Hawkins, John........................	350	350	....	1.25	438	....	350	....	....	No..	
Humphreys, Richard........................	520	520	....	1.25	650	....	515	....	5	No..	
Jones, Geo. F........................	371	371	....	1.50	556	....	371	....	....	No..	
Means & DeGarmo........................	600	600	....	2.25	1,350	....	575	....	25	No..	
Mendota Coal Co.:											
Mine No. 2........................	7,504	7,504	....	1.69	12,672	7,200	27	250	27	No..	
Mine No. 7........................	4,620	4,620	....	1.63	7,521	4,435	....	80	105	No..	
Mine No. 9........................	14,763	14,763	....	1.61	23,748	14,300	....	160	303	No..	
Mo. M'ng, Mfg. & Merc. Co........	5,624	5,624	....	2.00	11,248	5,349	150	75	50	No..	
Moore Coal Co........................	325	325	....	1.50	487	300	25	....	....	No..	
Robbins, J. A........................	800	800	....	1.50	1,200	....	752	....	48	No..	
Rogers Coal Co........................	14,949	14,949	....	1.56	23,437	14,830	119	....	....	No..	
Seavey & Triplett........................	400	400	....	1.50	600	....	372	4	24	No..	
Shelton, Wm. E., & Sons........................	449	449	....	1.37	615	....	440	....	9	No..	
Stevens, Americus........................	320	320	....	1.50	480	....	310	2	8	No..	
Totals........................	51,770	51,770	....	$1.56	$85,219	46,414	4,181	571	604		

TABLE 6--Continued.

Name of company or person operating.	Total tons of coal mined in 1909	Tons of coal mined by: Pickwork	Tons of coal mined by: Machines	Price per ton received at mines	Total value of all coal mined in 1909	Coal, how disposed of: Shipped by rail	Coal, how disposed of: Sold locally	Coal, how disposed of: Used at mines	Coal, how disposed of: Consumed by miners	Is coal used by railroad	Name of railroad company.
PLATTE COUNTY.											
Home-Riverside Coal Co	204,098	204,098		$2.08	$424,799	162,618	29,526	8,675	3,279	Yes.	Mo. Pac. and C., R. I. & P.
RALLS COUNTY.											
Clark Coal Co	5,139	5,139		$1.76	$9,046	5,047	92			Yes.	St. L. & H.
Dixon, Joseph	100	100		2.50	250		100			No.	
Ralls County Coal Co	6,000	6,000		1.82	10,920	5,000	1,000			Yes.	St. L. & H.
Smith, Henry, & Son	400	400		2.50	1,000		400			No.	
Tighe C. & M. Co	3,598	3,598		1.76	6,334	3,518	40		40	Yes.	St. L. & H.
Totals	15,237	15,237		$2.06	$27,550	13,565	1,632		40		
RANDOLPH COUNTY.											
Bowder, John	360	360		$1.25	$450		360			No.	
Bradley, D. T	1,800	1,800		1.67	3,015		1,800			No.	
Burge Bros	800	800		1.25	1,000		800				
Clark, D. E	520	520		1.75	910	320	200				
Cronan, J. M	1,995	1,995		1.75	3,491		1,995			No.	
De Mart & Clam	320	320		1.50	480		320				
Diamond Coal Co	2,500	2,500		1.90	4,750	2,300	200				
Durham, Daniel	1,200	1,200		1.25	1,500	400	800				
Davidson, D. C	282	282		1.50	423		282				
Esry, Andrew	560	560		1.50	840		560				
Eravi, Joseph	280	280		1.50	420		280				
Goett, P. J	720	720		1.50	1,082		720				
Jackson & Harris	1,000	1,000		1.75	1,750		1,000				
McKierman, W. H	767	767		1.50	1,150		767				
Mitchell, W. E. C., & M. Co	3,275	3,275		1.85	6,072	1,420	1,855				
Milburn Bros	910	910		1.75	1,593		910				
Morris, G. W., & Sons	2,540	2,540		1.50	3,810	1,270	1,270				
Northern Central Coal Co.:											
Mine No. 2	73,971	18,187	55,784	1.25	93,833	71,811		2,160		Yes.	Wab.
Mine No. 11	61,362		61,362	1.47	90,487	57,162		3,000	1,200	Yes.	Mo. Pac. & C. & A.

TABLE 6—Continued.

RANDOLPH COUNTY—Continued.

Name of company or person operating.	Total tons of coal mined in 1909	Tons of coal mined by		Price per ton received at mines	Total value of all coal mined in 1909	Coal, how disposed of.				Is coal used by railroad	Name of railroad company.
		Pickwork	Machines			Shipped by rail	Sold locally	Used at mines	Consumed by miners		
O'Toole, Joseph	400	400		$1.50	$600		400				
Pilkington, John	48	48		1.65	79		48				
Slaughter, J. M	300	300		1.75	525		300				
Smith Heirs	41,400	41,400					41,400				
Vaughan, W. T	5,163	5,163		1.50	7,744		5,163				
Ward, Henry	832	832		1.62	1,352		832				
Williams, L. B	400	400		1.75	700		400				
Williams & Rupp	2,204	2,204		1.50	3,306		2,180		24		
Totals	205,909	88,763	117,146	$1.56	$231,362	134,683	64,842	5,160	1,224		

RAY COUNTY.

Name of company or person operating.	Total tons of coal mined in 1909	Pickwork	Machines	Price per ton received at mines	Total value of all coal mined in 1909	Shipped by rail	Sold locally	Used at mines	Consumed by miners	Is coal used by railroad	Name of railroad company.
Blair, Hugh	1,584	1,584		$2.25	$3,564		1,584				
Brockman, J. C. & A. B	180	180		2.00	360		177		3		
Calnen-Blair Coal Co	3,000	3,000		1.85	5,550		2,750	150	100		
Central Coal & Coke Co., No. 50	19,214		19,214	1.85	35,545	18,244	970			No.	
Clark, Jacob	6	6		2.00	1,200		6				
Collier, J. W	588	588		2.00	1,176		588			No.	
Crawford-Wilson Coal Co	15,249	15,249		1.70	25,549	14,640		220	389	Yes.	A., T. & S. F.
Doran, John	746	746		2.00	1,492		726	10	10	No.	
Fowler Coal & Mng. Co	13,800	13,800		1.70	23,460	13,300	200	300		No.	
Gant, J. M	80	80		2.00	160		80			No.	
Huston, Fred	252	252		2.00	504		252			No.	
Hymer, O. P	300	300		2.50	750		300			No.	
Loeven, M. J	680	680		2.00	1,360		650	30		No.	
Maple Hill Coal Co	5,345	5,345		1.79	9,576	4,404	689	252			
Martin-Hubbell-Osborne	89,206	59,090	30,116	1.74	155,177	86,598		1,540	1,068	No.	
McCorkendale, J. R	1,600	1,600		2.00	3,200		1,600				
McDaniel, J. L	346	346		2.00	692		346				
Mercantile C. & M. Co	24,008	24,008		1.65	38,745	23,482		526		Yes.	A., T. & S. F.
Odell, E R	200	200		2.00	400		200			No.	
Ottman & Nelson	1,750	1,750		2.00	3,500		1,750			No.	
Pence & Calnen Coal Co	8,410	8,410		1.75	14,717	7,865		245	300	Yes.	A., T. & S. F.
Pickering Coal Co	36,145	36,145		1.87	67,707	34,671	1,183	291			
Ray County C., B. & Tile Co	683	683		2.00	1,366		653	4	26	No.	
Rice, Perry	3,200	3,200		2.00	6,400		3,200			No.	

TABLE 6—Continued.

RAY COUNTY—Continued.

Name of company or person operating.	Total tons of coal mined in 1909...	Tons of coal mined by		Price per ton received at mines..	Total value of all coal mined in 1909..........	Coal, how disposed of.				Is coal used by railroad............	Name of railroad company.
		Pickwork..	Machines...			Shipped by rail........	Sold locally..	Used at mines	Consumed by miners.....		
Richmond-Camden C. Co	56,351	56,351		$2.10	$115,117	52,769	1,910	1,672		Yes.	A., T. & S. F.
Ramsey, Robert	800	800		2.00	1,600		800			No..	
Shea, Thos. & Sons	3,600	3,600		2.00	7,200		3,600			No..	
Turner & Son	800	800		2.50	2,000		660	100	40	No..	
Thompson, Geo. W	1,020	1,020		2.00	2,040		990	6	24	No..	
Vibbard Coal Co	2,370	2,370		2.50	5,925	300	1,973		97	No..	
Ward, W. O	9,540	9,540		1.70	16,218	7,864	1,508	168		Yes.	A., T. & S. F.
Watson, James N	200	200		2.00	400		180	20		No..	
Woodruff, John	130	130		2.00	260		124		6	No..	
Totals	301,383	252,053	49,330	$1.98	$552,910	264,137	29,649	5,534	2,063		

SALINE COUNTY.

Name of company or person operating.	Total tons of coal mined in 1909	Pickwork	Machines	Price per ton received at mines	Total value of all coal mined in 1909	Shipped by rail	Sold locally	Used at mines	Consumed by miners	Is coal used by railroad	Name of railroad company
Garver, J. N	100	100		$2.50	$250		100				

ST. CLAIR COUNTY.

Name of company or person operating.	Total tons of coal mined in 1909	Pickwork	Machines	Price per ton received at mines	Total value of all coal mined in 1909	Shipped by rail	Sold locally	Used at mines	Consumed by miners	Is coal used by railroad	Name of railroad company
Cook, Jas. M	360	360		$2.00	$720		360			No..	
Collins, J. C	520	520		2.50	1,300		500		20	No..	
Greathouse, T. L	480	480		1.75	840		480			No..	
Totals	1,360	1,360		$2.08	$2,860		1,340		20		

SCHUYLER COUNTY.

Name of company or person operating.	Total tons of coal mined in 1909	Pickwork	Machines	Price per ton received at mines	Total value of all coal mined in 1909	Shipped by rail	Sold locally	Used at mines	Consumed by miners	Is coal used by railroad	Name of railroad company
Golston, Ira	144	144		$2.50	$360		144				
Hymes, J. W	200	200		1.50	300		200				
Long, G. B	180	180		1.65	315		180				
Mock & Grindle	1,500	1,500		1.75	2,625		1,482	8	10		
Watson, Jesse	276	276		1.75	483		276				
Totals	2,300	2,300		$1.83	$4,083		2,282	8	10		

TABLE 6—Continued.

SULLIVAN COUNTY.

Name of company or person operating.	Total tons of coal mined in 1909...	Tons of coal mined by		Price per ton received at mines..	Total value of all coal mined in 1909...........	Coal, how disposed of.				Is coal used by railroad	Name of railroad company.
		Pickwork..	Machines ..			Shipped by rail	Sold locally..	Used at mines	Consumed by miners.....		
Milan Coal Co.........................	4,972	4,972	....	$2.00	$10,000	488	3,990	258	236	Yes.	Q., O. & K. C. and C., B. & Q.
VERNON COUNTY.											
Brown, A. S..........................	400	400	....	$1.75	$700	200	200	......	......	No..	
Carbon Coal Co........................	6,000	6,000	....	1.55	9,300	5,640	100	188	72	Yes.	Mo. Pac.
Davis, Jas. P.........................	52	52	....	.....	....	....	52	......	......	.....	
Ewing, W. H...........................	100	100	....	2.50	250	....	85	......	15	No..	
Flake, J. W...........................	24	24	....	2.50	60	....	24	......	......	.....	
Jones Coal Co.........................	24,000	24,000	....	1.55	37,200	23,700	......	300	......	Yes.	Mo. Pac.
Koch, Herman..........................	500	500	....	2.50	1,250	....	500	......	......	.....	
Prewitt, Wm. T........................	300	300	....	2.50	250	....	300	......	......	.....	
Palmer, D. L..........................	10	10	....	2.50	25	....	10	......	......	.....	
Tuttle & Neagle.......................	86	86	....	2.50	215	....	86	......	......	.....	
Totals............................	31,472	31,472	....	$2.20	$49,250	29,540	1,357	488	87		

Table 7—Showing the Kind and Number of Openings, Number of Mines Operated, Kind of Ventilation, Plan of Working, by Counties.

Counties.	Kind of opening.				Total No. mines operated......	Ventilation.			Plan.	
	No. of shafts	No. of slopes	No. of drifts	No. of strip pits......		Natural....	Furnace....	Fan.......	Longwall...	Room and pillar....
Adair	12	5			17	1	2	14	5	16
Audrain	6				6	2		4	5	1
Barton	6	6	5	5	22	10	2	5	1	16
Bates	11	7	1	8	27	8	6	4	1	16
Boone	5	1			6	2	3	1	1	5
Caldwell	1				1			1	1	
Callaway	10		2		12	2	6	4	9	3
Carroll	2		1		3	3			3	
Cass	1				1			1		1
Chariton	1	1	3	2	7	4	1		1	4
Clay	1				1			1	1	
Cole	1				1	1				1
Dade	3				3	3				3
Grundy	1				1			1	1	
Henry	11	1	2		14	5	6	3	4	11
Howard		4			4	4			2	2
Johnson	3	1	1	3	8		4		11	4
Lafayette	23	6	15	2	46	5	18	19	39	4
Linn	8				8		4	4	8	
Livingston	2				2	2			1	1
Macon	9	6			15	3	6	6	2	13
Moniteau	1				1	1				
Monroe			1		1	1			1	
Montgomery	1	2	1		4	4			4	
Morgan	1				1	1				1
Platte	1				1			1	1	
Putnam	3	4	8		15	8	5	2	4	15
Ralls	3	1	1		5	1	2	2	4	1
Randolph	8	11	7		26	10	13	2		26
Ray	27	2	8		37	9	11	17	36	1
Saline	1				1	1				1
St. Clair		2		1	3	1	1			2
Schuyler	1	1	3		5	4	1			5
Sullivan	1				1			1	1	1
Vernon	3			6	9	3	2	1		3
Totals	168	61	59	27	315	99	93	94	147	157

Table 8—Showing Total Number of Kegs of Powder Used in the Production of Coal, the Average Cost per Keg to Miners, and the Total Amount Expended for Powder—Compared with 1908, by Counties.

Counties.	1909			1908		
	Total No. of kegs.	Average cost.	Total cost.	Total No. of kegs.	Average cost.	Total cost.
Adair	32,934	$2 00	$65,868	35,434	$2 00	$70,868
Audrain	10	1 20	12	315	2 00	630
Barton	13,252	2 00	26,491	5,139	1 95	10,038
Bates	6,495	1 97	12,777	5,473	1 92	10,504
Boone	831	1 96	1,629	725	2 00	1,447
Callaway	152	1 82	277	211	1 78	376
Cass	400	2 00	800	600	2 00	1,200
Carroll	2	2 00	4	10	1 50	15
Cole	68	1 44	98	15	1 86	28
Henry	19,028	1 99	37,955	11,350	2 00	22,610
Howard	15	1 67	25	10	1 80	18
Johnson	216	1 49	412	165	1 95	322
Lafayette	3,004	2 00	6,006	820	2 00	1,640
Linn	1,049	2 00	2,098	646	2 00	1,292
Macon	31,852	1 99	63,619	37,632	2 00	75,240
Monroe	....	....	....	2	2 00	4
Montgomery	6	2 00	12	6	2 00	13
Morgan	....	....	....	143	2 00	286
Putnam	....	....	....	2	2 00	4
Ralls	....	....	....	2	2 00	4
Randolph	5,137	1 95	10,050	1,403	1 94	2,720
Ray	4	1 75	7	....	....	....
Saline	4	2 25	9	4	2 00	8
St. Clair	....	....	....	5	1 60	8
Schuyler	1	2 00	2	1	2 00	2
Sullivan	300	2 00	600	....	....	....
Vernon	1,412	2 00	2,823	2,375	1 99	4,737
Totals	116,172	$1 88	$231,574	102,488	$1 93	$204,014

Table 9—Showing Power Used for Hoisting, Haulage and Fan, by Counties.

Counties.	Hoisting.				Haulage.			Fan.		
	Steam..	Electric.	Horse..	Hand..	Electric.	Mule...	Man...	Steam..	Electric.	Gasoline
Adair	12	1	3		1	11	3	13	1	
Audrain	3		3			4	2	4		
Barton	7		3	2		8	4	5		
Bates	8		7			8	7	2		
Boone			5			2	1	1		
Caldwell	1					1		1		
Callaway	3		7			1	2	3		
Carroll			2				2			
Cass	1					1		1		
Chariton			1							
Clay	1					1		1		
Cole			1							
Dade			3				1			
Grundy		1				1			1	
Henry	4		8	1		6	6	3		
Howard							2			
Johnson	1		1	2			3	1		
Lafayette	15		12	1	3	17	7	18	1	
Linn	4		4			2		4		
Livingston			2				1			
Macon	6		6	1		10	5	6		
Moniteau	1									
Monroe							1			
Montgomery			1	1						
Morgan	1						1			
Platte	1					1		1		
Putnam	3		6			7	4	2		
Ralls			3			2				2
Randolph	4		10		1	13	5	2		
Ray	15		11	2	1	14	11	15		1
Saline			1							
St. Clair							1			
Schuyler			1			1	2			
Sullivan	1					1		1		
Vernon	2		1			2		1		
Totals	94	2	105	10	6	114	71	85	3	3

Table 10—Showing Number of Mines Operated, Number of Employes, Kind of Labor Performed, Average Wages Paid, Union or Non-Union Labor, by Counties.

County.	No. of mines operated	*Number of miners	Average price paid per ton for pick work	Average price paid to machine men per ton	Average wages paid to machine helpers	No. of help under ground	No. of other help above ground	Average wages paid	No. of union men	No. of non-union men	Total number employed	Total number of tons produced by both pick and machine work	Total No. of tons produced for each person employed in and around mines
Adair	17	778	$ .82	$ .58	$2.75	337	122	$2.27	1,217	20	1,237	564,328	456
Audrain	6	104	1.20	.69	2.75	28	9	2.20		142	142	33,336	235
Barton	25	287	.80			43	34	2.17	316	48	364	217,001	634
Bates	27	216	.83			37	37	2.03	174	116	290	117,674	494
Boone	6	60	1.05		1.50	12	4	2.03	35	41	76	19,726	259
Caldwell	1	38	1.25			4	6	1.62		48	48	7,815	163
Callaway	12	90	1.25			7	12	1.62		109	109	32,491	298
Carroll	3	7	1.50					1.50		7	7	1,210	173
Cass	1	17	.97			6	5	1.84		29	29	7,500	258
Chariton	7	9	1.60							9	9	1,007	112
Clay	1	95	1.11			18	7	2.40	120		120	44,500	371
Cole	1	2	1.25			2	2	1.25		6	6	2,466	411
Dade	3	19	1.00				2	1.75		20	20	5,592	279
Grundy	1	34	1.35			3	3	2.56	40		40	9,869	244
Henry	14	367	1.06			70	39	2.00	412	64	476	279,754	587
Howard	4	11	1.34			3	1	2.56		15	15	611	40
Johnson	8	15	1.64			7	2	1.56	9	15	24	6,556	273
Lafayette	43	1,230	1.25	.69	2.56	463	138	2.30	1,651	180	1,831	724,110	395
Linn	8	295	1.36			55	31	2.36	381		381	132,810	348
Livingston	2	5					1	1.25		6	6	735	123
Macon	15	1,213	.79			388	111	2.28	1,686	26	1,712	816,306	477
Moniteau	1	6	1.50				2			8	8	1,792	224
Monroe	1	3	1.75							3	3	450	150
Montgomery	4	8	1.33			2	2			12	12	2,828	235
Morgan	1	5					3			8	8	1,680	210
Platte	1	387	.95			67	82	2.29	535		535	204,098	381
Putnam	15	159	1.00			25	17	2.00	168	33	201	51,770	257
Ralls	5	47	1.14			6	3	2.66	56		56	15,237	272
Randolph	27	288	.91	.45		55	31	2.31	309	65	374	205,909	550
Ray	33	570	1.22	.67	2.56	168	77	2.44	762	53	815	301,383	369
Saline	1	3	1.50			1		1.00		4	4	100	25
St. Clair	3	7	1.42			1		1.75		8	8	1,360	170
Schuyler	5	12	1.12			1	1	1.50		14	14	2,390	170
Sullivan	1	10	1.37			5	3	2.56		18	18	4,972	276
Vernon	10	71	.64			13	15	2.11	94	5	99	31,472	318
Totals and averages	313	6,468	$1.19	$.62	$2.43	1,827	802	$2.00	7,965	1,132	9,097	3,850,748	423

*Including machine runners and helpers.

Table 11—Showing the Rank of the Counties in Production, the Tonnage and Value of Coal Output and the Price per Ton Received at Mines—1909.

County.	Tons, pickwork.	Tons, machine work	Total tons mined.	Value of coal mined.	Average price per ton rec'd at mines.
1 Macon	816,306		816,306	$1,154,261	$1 67
2 Lafayette	153,728	570,382	724,110	1,316,991	2 16
3 Adair	471,034	93,294	564,328	857,629	1 75
4 Ray	252,053	49,330	301,383	552,910	2 04
5 Henry	272,254	7,500	279,754	459,712	2 13
6 Barton	217,001		217,001	296,342	1 66
7 Randolph	88,763	117,146	205,909	231,362	1 60
8 Platte	204,098		204,098	424,799	2 08
9 Linn	132,810		132,810	286,061	2 59
10 Bates	116,854	820	117,674	192,565	1 73
11 Putnam	51,770		51,770	85,219	1 55
12 Clay	44,500		44,500	80,660	1 80
13 Audrain	30,116	3,220	33,336	62,339	1 99
14 Callaway	32,491		32,491	66,298	2 04
15 Vernon	31,472		31,472	49,250	2 20
16 Boone	19,726		19,726	39,188	1 94
17 Ralls	15,237		15,237	27,550	2 07
18 Grundy	9,869		9,869	30,624	3 10
19 Caldwell	7,815		7,815	19,537	2 50
20 Cass	7,500		7,500	15,000	2 00
21 Johnson	6,556		6,556	13,983	2 38
22 Dade	5,592		5,592	9,786	1 75
23 Sullivan	4,972		4,972	10,000	2 00
24 Montgomery	2,828		2,828	6,665	2 37
25 Cole	2,466		2,466	4,932	2 00
26 Schuyler	2,300		2,300	4,083	1 83
27 Moniteau	1,792		1,792	4,695	2 62
28 Morgan	1,680		1,680	4,200	2 50
29 St. Clair	1,360		1,360	2,860	2 08
30 Carroll	1,210		1,210	3,025	2 50
31 Chariton	1,007		1,007	2,697	2 35
32 Livingston	735		735	1,700	2 50
33 Howard	611		611	1,288	2 18
34 Monroe	450		450	1,125	2 50
35 Saline	100		100	250	2 50
Totals	3,009,056	841,692	3,850,748	$6,319,586	$2 13

Table 12—Showing the Coal Output Since 1890.

Year.	Total tonnage.	Total value.	Gain in production.	Loss in production.
1890	2,437,399	$3,234,351		
1891	2,650,018	3,480,866	212,619	
1892	3,017,285	3,825,828	367,267	
1893	3,190,442	3,999,681	173,157	
1894	2,383,322	3,013,075		807,120
1895	2,283,081	2,675,690		100,241
1896	2,420,147	2,741,711	137,066	
1897	2,429,388	2,684,757	9,241	
1898	2,838,152	3,148,862	408,764	
1899	3,391,811	3,582,111	553,659	
1900	2,995,022	3,643,975		396,789
1901	3,813,527	4,716,331	818,505	
1902	4,063,572	5,325,832	250,045	
1903	4,265,328	6,730,515	201,756	
1904	4,241,912	7,003,078		23,416
1905	4,381,956	7,147,665	140,044	
1906	3,889,659	6,352,913		492,297
1907	4,355,494	7,306,125	465,835	
1908	3,400,644	5,644,330		954,850
1909	3,850,748	6,319,586	450,104	
Totals	66,298,907	$92,577,282		

Table 13—Showing the Rank in Production and the Coal Production of Each County for a Period of Twenty Years.

Counties.	Rank...	1890.	Rank...	1891.	Rank...	1892.	Rank...	1893.	Rank...	1894.	Rank...	1895.	Rank...	1896.	Rank...	1897.	Rank...	1898.	Rank...	1899.
Bates	1	671,373	1	726,273	2	659,924	2	627,514	4	291,271	3	252,231	2	375,300	2	410,304	3	343,878	2	441,983
Macon	2	457,896	2	454,029	1	685,335	1	788,563	1	511,566	1	539,120	1	519,649	1	490,601	1	720,999	1	739,293
Ray	3	387,346	4	282,247	5	272,948	4	319,405	6	196,852	6	150,998	6	149,083	6	157,652	6	215,348	6	252,683
Lafayette	4	329,845	3	352,603	3	347,600	3	371,928	2	296,931	2	256,761	3	307,286	3	284,448	2	347,857	3	392,608
Randolph	5	245,898	5	224,758	4	297,011	6	219,762	5	209,656	5	218,774	5	230,194	5	243,012	4	314,842	4	354,830
Henry	6	127,281	6	144,139	6	137,258	8	125,962	8	84,473	9	99,058	9	78,551	8	76,023	10	68,261	9	81,373
Putnam	7	91,584	7	123,526	7	134,984	7	145,641	7	119,832	7	111,572	8	85,032	7	101,330	7	121,952	7	126,673
Barton	8	65,097	9	63,026	9	108,784	9	61,301	10	55,767	10	76,242	12	37,570	9	70,554	8	104,233	11	67,844
Vernon	9	33,292	8	64,303	8	119,036	5	234,376	3	297,599	4	237,965	4	303,886	4	281,894	5	252,134	5	298,382
Grundy	10	23,593	10	28,983	13	28,670	12	35,770	12	35,000	12	37,200	10	41,000	11	35,402	12	39,974	13	39,633
Audrain	11	22,813	14	19,569	12	29,792	11	42,262	11	43,910	11	40,918	11	37,611	12	35,167	14	36,498	12	40,759
Boone	12	21,302	12	23,577	14	21,058	14	25,602	17	19,038	14	21,090	15	20,428	18	14,127	16	16,780	14	29,665
Callaway	13	18,355	16	15,581	15	16,551	15	23,961	13	23,223	15	18,771	14	22,182	15	20,152	15	21,281	17	22,356
Caldwell	14	17,074	13	22,661	10	38,333	13	29,020	14	22,869	16	17,876	16	19,780	16	20,000	13	23,000	15	28,000
Adair	15	14,840	15	17,110	17	14,820	16	20,957	15	20,744	13	24,540	13	23,510	13	27,078	11	62,215	8	104,868
Montgomery	16	14,744	17	13,124	16	16,039	17	15,923	19	12,175	18	10,900	18	10,736	17	15,200	26	2,740	27	2,670
Linn	17	13,403	11	28,036	11	35,588	10	48,302	9	71,807	8	100,179	7	92,022	10	67,895	9	83,041	10	72,081
Johnson	18	13,187	18	10,530	18	10,485	18	12,101	18	15,427	19	8,873	24	3,961	23	2,870	21	4,318	23	4,710
Clay	19	5,036	19	8,289			19	7,139	16	19,371	23	4,000	20	6,500	19	9,000	30	1,500	20	8,000
Howard	20	4,000									25	3,460	25	3,220	25	2,240			35	456
Cooper	21	1,594	24	2,200	24	3,666	23	2,892	26	2,639	27	2,492	31	750	34	250	36	514	36	320
Dade	22	1,400	22	3,402	20	6,881	20	6,695	27	2,327	22	5,066	22	4,570	23	2,980	20	4,495	22	4,930
Livingston	23	1,100	33	200	29	1,000	30	1,000	32	800	33	1,050	29	1,155	31	1,468	27	1,817	34	800
Ralls	24	675	29	614	32	280	25	2,160	23	4,400	20	8,489	19	9,644	20	7,843	18	7,768	18	16,014
Saline	25	660	20	7,981	22	4,440	26	1,865	29	1,875	24	3,682	32	432	32	1,281	35	740	32	1,320
Schuyler	26	300	32	280	30	766	32	962	24	3,556	30	1,620	26	2,440	28	2,022	25	2,921	21	5,304
Morgan	27	240	35	36													31	1,440		
Chariton	28	120	27	1,170	25	2,312	28	1,136	34	185	28	1,859	33	355	29	1,573	24	3,488	24	4,517
Monroe	29	108	36	12													28	1,810	33	960
Miller	30	87	34	130	33	127														
Shelby	31	40	37	8																
St. Clair			21	3,866	21	5,405	21	6,517	22	5,337	21	5,487	23	4,058	21	5,452	23	3,596	25	4,210
Nodaway			23	2,222	26	1,850	24	2,548	25	2,984	29	1,802	21	6,065	24	2,769	33	1,000	29	2,350
Cole			25	2,000	27	1,548	27	1,200	28	2,000	32	1,120			22	3,794	22	3,704	19	8,600
Cedar			26	1,264	23	4,181	33	890	33	730	31	1,590	28	1,863	27	2,178	32	1,244	30	2,116
Jasper			28	633																
Sullivan			30	560	19	8,800	31	1,000	21	6,600	34	1,000								
Moniteau			31	476																
Pettis					31	433	34	181	30	1,738					30	1,470	19	5,400	26	3,200
Carroll					28	1,380	29	1,088	31	920	26	2,664	27	2,304	26	2,225	34	803	28	2,397
Jackson							22	4,819	20	6,720	17	14,632	17	18,000	14	21,028	17	15,000	16	27,125
Cass													30	1,000	33	1,206	29	1,558	31	1,321
Total tons...		2,437,399		2,650,018		3,017,285		3,190,442		2,383,322		2,283,081		2,420,147		2,429,388		2,838,152		3,191,811

TABLE 13—SHOWING THE RANK IN PRODUCTION AND THE COAL PRODUCTION OF EACH COUNTY FOR A PERIOD OF 20 YEARS—Continued.

Counties.	Rank...	1900.	Rank...	1901.	Rank...	1902.	Rank...	1903.	Rank...	1904.	Rank...	1905.	Rank...	1906.	Rank...	1907.	Rank...	1908.	Rank...	1909.
Bates	3	363,577	4	347,047	4	359,061	7	176,877	8	152,495	9	178,246	8	160,014	9	166,512	7	136,531	10	117,674
Macon	1	595,297	1	1,025,213	1	1,198,133	1	1,119,646	1	899,963	1	817,093	1	782,948	1	1,159,233	1	851,130	1	816,306
Ray	5	248,591	6	264,900	6	280,162	5	356,424	5	225,485	5	226,369	5	280,156	4	349,180	4	294,230	4	301,383
Lafayette	2	377,892	2	439,217	2	539,612	2	539,612	2	713,677	3	705,917	2	648,015	2	712,981	2	571,908	2	724,110
Randolph	4	303,133	3	432,655	3	432,655	3	605,716	4	578,895	4	544,118	4	342,497	11	97,702	15	31,266	7	205,909
Henry	9	129,902	10	103,267	10	91,612	10	87,203	10	113,987	10	132,619	10	122,718	8	166,928	5	216,152	5	279,754
Putnam	10	106,203	9	139,456	9	125,543	9	114,008	12	70,118	12	84,240	11	102,973	13	58,999	10	54,505	11	51,770
Barton	8	141,520	7	183,983	8	200,433	6	185,257	6	199,973	8	196,175	6	267,344	7	191,106	9	103,765	6	217,001
Vernon	6	229,343	8	164,972	7	207,126	8	175,221	7	173,571	6	206,772	9	155,427	6	221,194	11	52,197	15	31,472
Grundy	13	42,371	13	42,361	12	34,936	14	25,563	19	13,647	36	500	23	7,990	22	11,040	18	10,822	18	9,869
Audrain	12	43,530	12	44,066	13	33,435	12	39,009	13	42,578	13	52,434	14	39,940	18	25,463	14	31,391	13	33,336
Boone	17	19,179	16	21,549	15	23,609	15	22,216	14	35,865	14	39,152	17	28,132	16	35,495	16	26,842	16	19,726
Callaway	18	15,120	15	21,562	14	24,483	13	28,882	17	19,754	15	37,645	15	39,660	17	34,748	12	50,719	14	32,491
Caldwell	14	26,000	18	19,021	18	11,853	18	11,485	20	11,866	18	15,000	22	11,419	21	11,656	19	10,800	19	7,815
Adair	7	181,577	5	347,047	5	312,403	4	516,267	3	658,558	2	708,388	3	428,037	3	584,371	3	568,446	3	564,328
Montgomery	29	2,670	28	1,680	26	2,400	27	2,880	26	2,371	24	4,000	31	1,840	29	2,990	29	1,382	24	2,828
Linn	11	81,130	11	85,459	11	79,221	11	64,206	11	102,205	11	91,593	12	97,879	10	124,068	8	104,240	9	132,810
Johnson	20	8,455	20	9,695	19	8,500	25	3,847	23	4,139	17	32,221	18	23,853	12	66,403	20	7,888	21	6,556
Clay	19	12,800	19	16,681	20	8,052	17	18,000	15	32,400	16	34,317	13	42,002	14	40,590	13	37,786	12	44,500
Howard	24	2,944	24	3,685	22	4,350	20	9,051	25	2,694	20	11,954	20	14,949	20	13,456	21	7,438	33	611
Cooper	32	1,000	33	1,265	33	945	34	315	35	500	..	....	..	....	..	....	..	....	..	....
Dade	28	2,350	21	5,393	21	5,180	22	8,260	27	2,286	31	1,646	28	2,151	34	1,912	23	4,654	22	5,592
Livingston	23	3,813	34	1,177	34	800	29	2,068	30	1,539	26	2,810	29	2,150	33	2,270	30	1,010	32	735
Ralls	15	20,956	14	25,238	17	20,150	16	18,085	18	16,902	19	14,961	19	17,073	19	16,768	17	14,415	17	15,237
Saline	34	500	35	942	36	205	..	....	..	....	33	1,410	32	900	35	845	36	150	35	100
Schuyler	21	4,253	23	3,800	23	3,373	19	9,077	16	21,860	22	5,292	30	2,094	24	4,840	26	2,425	26	2,300
Morgan	35	300	29	1,674	35	446	23	4,183	21	4,200	32	1,500	35	600	30	2,640	27	1,683	28	1,680
Chariton	25	2,940	30	1,447	27	2,025	33	956	32	625	21	10,651	16	29,044	15	36,474	31	879	31	1,007
Monroe	33	822	31	1,445	29	1,980	28	2,451	28	1,682	35	730	..	....	..	....	33	800	34	450
Miller	..	....	..	....	..	....	..	....	..	....	..	....	..	....	..	....	..	....	..	....
Shelby	..	....	..	....	..	....	..	....	..	....	..	....	..	....	..	....	..	....	..	....
St. Clair	22	3,892	22	4,539	24	3,139	24	3,963	31	1,229	27	2,559	21	13,220	32	2,360	32	812	29	1,360
Nodaway	27	2,371	26	2,000	30	1,590	..	....	..	....	28	2,063	33	731	37	120	..	....	..	....
Cole	..	....	25	2,280	32	1,045	32	1,440	29	1,600	23	5,080	27	2,720	31	2,401	34	500	25	2,466
Cedar	31	1,095	27	1,730	25	3,107	31	1,554	36	330	37	408	..	....	..	....	35	165	..	....
Jasper	..	....	..	....	..	....	..	....	..	....	..	....	..	....	..	....	..	....	..	....
Sullivan	..	....	..	....	..	....	..	....	..	....	30	1,666	..	....	28	3,000	24	3,263	23	4,972
Moniteau	..	....	36	480	37	143	..	....	34	576	34	1,146	24	3,550	25	3,552	25	3,100	27	1,792
Pettis	..	....	..	....	..	....	..	....	..	....	..	....	..	....	..	....	..	....	..	....
Carroll	30	1,575	32	1,430	28	1,985	30	1,570	33	604	38	164	34	717	23	4,850	28	1,581	30	1,210
Jackson	16	20,900	17	20,000	16	21,000	21	8,500	24	3,348	..	....	..	....	..	....	..	....	..	....
Cass	26	2,745	..	....	31	1,350	26	3,316	22	4,173	29	1,882	25	3,422	26	3,400	22	5,340	20	7,500
Platte	..	....	..	....	..	....	..	....	9	126,217	7	205,535	7	210,197	5	259,849	6	190,306	8	204,098
Benton	..	....	..	....	..	....	..	....	..	....	25	3,700	26	3,297	27	3,106	..	....	..	....
Lewis	..	....	..	....	..	....	..	....	..	....	..	....	..	....	36	210	37	123	..	....
Total tons		2,995,022		3,810,767		4,063,572		4,265,328		4,241,912		4,381,956		3,889,659		4,355,494		3,400,644		3,850,748

MINE INSPECTIONS.

COAL.

REPORTS OF COAL MINE INSPECTIONS.

ROBERT RICHARDS AND MICHAEL GAVIN, *Inspectors.*

ADAIR COUNTY.

Adair Brick, Coal and Construction Company, Ivie mine, Kirksville.—I was called to this mine by miners employed in the mine, complaining that incompetent men are employed. I investigated the matter and found that complaint was not founded upon facts. Only qualified miners are employed and the mine was in good condition. I inspected ropes, cages and safety catches and found same satisfactory. A twelve-foot fan supplies ample ventilation. Date of inspection, November 3, 1909. (Insp. by Richards.)

Arctic Coal Company, Novinger.—I visited this mine on July 21, 1909, and found the underground workings in very good condition. The hoisting is done by horse power, with steel ropes and iron cages, but no safety catch appliances were in use, and these were ordered installed. (Inspected by Richards.)

Second Inspection.—September 30, 1909. I made this inspection at the request of the officers of the coal company, acting under an order of the circuit court in a suit brought by the Q., O. & K. C. Railroad Company against the mining company. The suit was for damage to railroad property due to cave-in of right of way, and caused by entries driven under the road bed. I found two entries driven, one main entry and an air course running under and along the right of way of the railroad company, the main entry being six feet wide and the air course four feet wide, both one hundred feet long and extending within safe distance along either side of the right of way. I failed to see that the railroad property had been damaged or rendered unsafe by reason of entries driven, as the works where same pass under the right of way had been reinforced with large substantial timbers. (Inspected by Richards.)

Consolidated Stahl Coal Company, Stahl.—This mine, located one-fourth mile east of Stahl, was inspected July 22, 1909, and everything in and about the mine found in a satisfactory condition. A spur track from the Q., O. & K. C. railway to the mines provides shipping facilities. Seventy-five per cent of the product is machine-cut coal. (Inspected by Richards.)

J. M. Ivie and Sons, Rockyford Mine, Kirksville.—I visited this mine August 25, 1909. The interior of the mine was in good condition and a twelve-foot fan furnished good ventilation. A steam hoist of the Eagle Iron Works pattern was satisfactory in all respects. Some time after this inspection the mine was sold to the Adair Brick, Coal and Construction Company. (See inspection under new firm.) (Inspected by Richards.)

Manufacturer's Coal and Coke Company, Connelsville.—Mine No. 4.—Upon my visit to this mine on July 16, 1909, I found the mine idle on account of the high water. The opening being near the Chariton river, the heavy rains caused the water to raise until the engine house was submerged, thus preventing steam to work the pumps to keep the water out of the mine, and, therefore, no inspection could be made. (Inspected by Richards.)

Same Company, Mine No. 1.—I inspected this mine on July 15th, 1909, and found everything in good condition. A fourteen-foot fan furnished good ventilation throughout the mine; the top buildings, machinery, ropes, cages, etc., were first-class in every respect. (Inspected by Richards.)

Same Company, Mine No. 50.—I made inspection of this mine on December 22d, 1909, and found same in excellent condition.

Kansas City Midland Coal and Mining Company, Novinger, Mine No. 2.—On date of inspection, July 16th, I found mine in good condition except that roadway was very dusty. I called attention to this fact, and the foreman promised to keep roadway damp to prevent the dust from vitiating the air. (Inspected by Richards.)

Same Company, Mine No. 3.—This mine was inspected on December 4th, 1909, and I could find no fault with the manner of operating same. The sanitary conditions were perfect. (Inspected by Richards.)

Rombauer Coal Company, Novinger, Mine No. 2.—I visited this mine on March 6, 1909, and inspected the underground workings. I found the entries clean and well timbered and the air courses in good shape with plenty of air circulation through every section. I noticed, however, that a great many of the miners in this mine, working in wide rooms, made little or no pretense at propping their places; others set their props at all angles and from ten to fifteen feet apart in the gob and thirty to forty feet from the face. Such propping should not be tolerated. If the miner cares nothing for his life, he should be taken out. The majority of accidents occur through falls of rock and can be traced to bad propping. (Inspected by Thomas.)

Same Mine, Second Inspection.—I visited this mine on July 21st, 1909. I found the interior of the mine to be safe and sanitary. The ventilation furnished by a twelve-foot fan was good and sufficient. (Inspected by Richards.)

Same Company, Mine No. 3.—Inspected this mine on July 14th, 1909, and found everything in good condition. The management had just introduced coal cutting machines, and the plan of working the mine was being changed from room and pillar to long wall method. If this method proves a success, all the larger mines in Adair county will likely adopt the long wall plan of working the mines and the use of coal cutting machines. (Inspected by Richards.)

Same Company, Mine No. 4.—This mine was inspected on July 14, 1909. It is practically a new mine, having been opened within the last four months.

The company contemplates operating it on the long wall plan. I found the steam blower used to furnish air, giving only fair results; however, the company is now sinking a new air shaft, which, when completed, will, no doubt, correct this defect in ventilation. I examined the top workings, machinery, cages, safety catches and ropes, and found same to fill every requirement of the law. The company maintains a weekly inspection of the boilers in use. (Inspected by Richards.)

Star Coal Company, Kirksville, Mine No. 1.—I inspected this mine March 4, 1909. The company operating this mine is composed of business men of Kirksville, five thousand acres of coal land lying west and south of Kirksville having been leased. Mine No. 1 is located close to the city limits and sunk on the edge of the coal crop which is 230 feet in depth. The shaft was sunk at this point in order to avoid a hard pull to town for the teamsters. The company will have to drive a pair of entries several hundred feet in before the workable coal is reached. These entries will dip until they reach the basin. It is easier to haul the product uphill than to grade a half mile of road on top. The mine is equipped with electric hoisting machinery, commodious engine house, good pit head and chutes for loading coal into wagons, good cages, ropes and safety appliances. On date of inspection one pair of entries had been driven to the west, and a pair of cross entries had been started but abandoned on account of the coal being so low. The coal measured from 26 to 28 inches in thickness and is overlaid with good shale roof. (Inspected by Thomas.)

Second Inspection July 23, 1909.—Mine was not yet entirely opened on date of inspection and was not being operated owing to some controversy with the miners. (Inspected by Richards.)

Third Inspection, October 13, 1909.—I found the mine in first-class condition, except that the main entry was in bad shape caused by water. A good volume of pure air was circulating throughout the mine, and the ropes, cages, safety catches and scales were all in good order. (Inspected by Richards.)

Great Northern Fuel Company, Novinger, Mine No. 1.—I inspected Mine No. 1 of this company on December 3, 1909. At time of inspection 54 men were employed, and the mine was in fairly healthy condition. The ropes, cages and safety catches were in good working order, and a twelve-foot fan supplied ample ventilation. The mine has one escape shaft in good condition. (Inspected by Richards.)

Same Company, Mine No. 21.—I visited this mine on March 5th, on complaint of the miners that the mine was not provided with proper escape. I found thirty-one men at work in the mine and only one opening. I had served notice on this company almost a year before to sink an escape shaft, and was under the impression that same had been sunk to coal and connection made with main shaft. Finding my order disregarded, I renewed same, giving the management to understand that unless escape shaft was sunk with all possible speed, mine would be closed down until same was completed. I inspected the mine thoroughly, and found the underground workings in good condition. The ventilation was good in every section, the air courses were clean and free from falls and well timbered. (Inspected by Thomas.)

Second Inspection.—I made an inspection of this mine on May 3, 1909. I found underground workings in good condition except as to ventilation. But this defect will soon be overcome with the completion of the air shaft now in course of construction and already down some fifty feet, and new entries are being driven to connect with the air shaft. When this work is completed it will place the mine in the class of well ventilated mines. I examined all machinery, cages and safety appliances, and found same to be in good working order. (Inspected by Richards.)

Third Inspection.—I inspected this mine on July 29th, and found everything in and about the mine satisfactory. The company recently installed a new hoisting engine of the latest pattern, purchased of the Eagle Iron Works. A new air shaft, ordered by Inspector Thomas, was about completed, and a number of men were employed on bottom retimbering, while another gang of men was at work on the main entries, retimbering and putting same in first-class condition. (Inspected by Richards.)

Same Company, Mine No. 23.—I went to this mine on May 4th, upon the request of the miners' organization at Novinger, complaint having been made that the shaft was in danger of a landslide caused by excessive rains. I found the shaft in bad condition, but not as dangerous as intimated, and no cause for great alarm to the men at work in the mine, as there is an air shaft which provides perfectly safe means of escape. I found here and there some small falls of slate in the mine which I ordered removed, and the company immediately took steps to clear away same. I examined the pit head and mine machinery, including cage and safety appliances, and found same in first-class condition. (Inspected by Richards.)

Second Inspection.—This mine was thoroughly inspected on July 20, 1909, and found in good condition, both as to ventilation and sanitation. (Inspected by Richards.)

Third Inspection.—On receipt of a telegram sent to Governor Hadley, which read, "Fire in Mine No. 23 of the Great Northern Fuel Company, and no escape," I immediately went to Novinger. Arriving at Novinger on November 21st, I learned that it was a gob fire, and that same had been properly sealed up, and I did not enter the mine until the 22d, when, in company with the superintendent of the mine and a committee of miners, I visited that part of the mine in which the fire was said to be. I found the places sealed up with good stoppings. The main air course to the escape shaft had some falls in it, but was not blocked at any point. The return air course was blocked by a fall. The superintendent ordered the foreman to have one of the cross cuts opened at this point, to allow a free passage of air to return to the main entry. I recommended that the main air course to the escape shaft be cleaned and timbered; that the ladder in the escape shaft be replaced by a stairway, and that a curtain on the seventh east be replaced by a door. (Inspected by Gavin.)

Relative to the "gob fire" in Mine No. 23, above referred to by Inspector Gavin, the Secretary of the Bureau of Mines received the following letter:

November 20, 1909.

Hon. Secretary, Bureau of Mines and Mining, Jefferson City, Missouri:

Dear Sir: As per my conversation with you over the 'phone this morning, I write you the situation at our mine, No. 23. As you are aware, in this field, there is an ever-prevailing tendency of the old works to fire. There is not a mine in this district that has not had more or less trouble on account of fire in the old works. About three months ago we had a fire break out between our fourth west and fifth west entries in the old abandoned works. We loaded out what part of this fire we could get at and immediately sealed up the block of workings where this fire originated. On October 12th we found one of our sand stoppings had sprung a leak and allowed the gob to be re-ignited. We immediately went over our stoppings and succeeded, in one day's time, in completely sealing up the works again and smothering the fire. There is no danger whatever, as we have this block of works completely cut off and sealed up, and it has no possible show of spreading beyond the immediate confines, even though it should be afire. I think you will agree with us, as will also the Mine Inspector, that the only way to handle the old works in this field is to completely seal them when they are worked out, as we have done in this case, thereby avoiding any danger whatever to the lives of our miners.

We wish to advise you further, that should this block of old workings get afire, despite our having it sealed, that the miners would be in no danger whatever, as we have two separate and distinct exits through which the men could escape, regardless of any fire. I understand that you will have a mine inspector on the ground today or tomorrow, and I think his report will bear out the above statement of facts. You may rest assured that any suggestions he may make that will lead to making our mine more safe for the welfare of the men therein employed, will be most cheerfully complied with by our company.

Yours very truly,
GREAT NORTHERN FUEL COMPANY.
I. B. GRANT, Gen. Manager.

P. S.—Enclosed herewith is a carbon copy which you may hand to the Governor if you see fit, as I understand the complaint of this mine was sent direct to him.

On November 21st the department received the following telegram from State Mine Inspector Richards:

Bevier, Mo., November 21, 1909.

Geo. Bartholomaeus, Secretary, Jefferson City, Missouri:

"Fire in mine twenty-three at Novinger under control."

ROBERT RICHARDS.

AUDRAIN COUNTY.

Audrain Coal Company, Vandalia; R. S. Thomas, Inspector; date of inspection, February 3, 1909.—This mine is operated by a stock company and nearly all the miners working in the mine have stock therein. The mine is operated in up-to-date manner. I found a splendid tipple, commodious engine house and steam hoisting machinery of late pattern. The top structures, ropes, cages and safety appliances were in good condition. I inspected the underground workings, and found the ventilation, produced by a twelve-foot fan, good. The air was forced to the face of the workings, but could not travel the entire circle or face owing to faults encountered. The foreman tried to evade these by cutting around them, but it did not work well, so he had to conduct the air back to the entries, then back to the face. The mine was in a most satisfactory condition at this time.

Second Inspection, June 17, 1909.—I examined top structures and underground workings, and found same in satisfactory condition. New hoisting ropes recently supplanted the old ones, and ventilation, cages, ropes and safety catches were in first-class order. (Inspected by Richards.)

Standard Coal and Mining Company, Vandalia; inspected February 2, 1909, by R. S. Thomas.—This mine is operated by a co-operative company, and has been in operation for nine years. The condition of the mine speaks for the able management, everything being in excellent condition. The mine is opened up to the east and west in a complete circle. The east side was closed down on date of inspection.

Second Inspection, June 17, 1909, by Robert Richards.—Coal is reached by a shaft eighty feet deep, and is worked on the long wall plan. The mine is ventilated by a furnace with good results. Found everything satisfactory.

Martinsburg Coal and Mining Company, Martinsburg.—On date of inspection, September 25, 1909, I found the mine to be in good, healthy condition, sufficient air traveling throughout the mine. The roadways were high, dry and clean. The ropes, cages and machinery were also in good order. A new air course was opened up a short while ago, and the mine put in good shape generally. (Inspected by Richards.)

W. H. Davidson operates a small mine four and a half miles east of Laddonia, on land owned by James Lynch. Coal is reached by a shaft forty-five feet deep, and the ventilation provided by means of a furnace is good. Coal has not been mined to any great extent, as the mine is practically new. (Inspected by Richards.)

Lauder-Peterson Coal Company, Mexico; inspected by R. S. Thomas, February 4, 1909.—The mine is located near the town of Farber, on land owned by Tate Hess. On date of the inspection I found eight miners at work. The mine was in a satisfactory condition underground, but I noticed that the safety catches were broken. I ordered new ones to be placed as soon as possible.

Second Inspection, June 18, 1909, by Robert Richards.—This mine is operated under a lease from the Farber Coal Company. The Lauder-Peterson Coal Company is a co-operative concern, each miner being a shareholder. The coal is cut by Goodman electric coal cutting machines, and the underground workings are in excellent condition.

Bevan Mine, located one and a half miles south of Laddonia on one hundred and twenty acres of land owned by Mrs. William Bevan, is operated by Mrs. Bevan's son. On date of inspection, February 5, 1909, I found six men employed. The mine is operated only during the fall and winter months, and I found same in a very satisfactory condition. (R. S. Thomas, Inspector.)

Note.—Mrs. Bevan sold her farm and mine to J. A. Smith, and the mine is operated under lease by William Self. (Inspected by Richards.)

BARTON COUNTY.

Western Coal and Mining Company, Mine No. 17.—This is a new mine located one and a half miles northwest of Minden. The main shaft was sunk last fall, and the air shaft was recently completed and connected with the main shaft, ladders having also been placed in same. All equipment is new and first-class. On date of inspection, January 15th, thirty miners and ten other men were employed. I was called to the mine by one of the miners who complained that the company was violating the law by driving break-throughs over fifty feet apart. Upon investigation I found one instance in which this was true. At a point where the company would have started a break-through a "horseback" was encountered in the entry, and the company decided to drive through this before making a cross cut, which I consider under the circumstances no violation of the law. I made inquiry of the man who made complaint, if the air was bad, and he informed me that he had no fault to find with the air. I found most of the men working in the mine with overcoats on. I find that some of the miners at work here are very arbitrary, expecting the company to submit to everything demanded. No company can successfully operate with such cranks, and the sooner such men are dispensed with the better for the miners' organization, and for the company employing them. (Inspected by Hamil.)

Same Company, Mine No. 17.—This mine is entered by a shaft 64 feet deep and the plan of working is room and pillar work. I found ninety-five miners employed with five drivers and seven top men at work. The mine is ventilated by a sixteen-foot fan, giving ample air current in all parts of the mine. The hoisting machinery was in good condition and the safety appliances were in good working order on date of inspection, October 29th. (Inspected by Gavin.)

Same Company, Mine No. 9.—This is a slope mine located one and a half miles north of Minden and operated under lease by Daniel Fletcher and Harry Rodgers. On date of inspection seventeen miners, two drivers and two top men were employed. I examined the underground workings as well as the hoisting machinery on October 29th, and found everything satisfactory. I also tested the scales and found same perfectly adjusted. (Inspected by Gavin.)

Pullen and Sons operate a small shaft one and a half miles northeast of Minden, employing eleven miners. I examined this mine on October 29th, finding ropes, cages and safety catches in good order. Ventilation in the mine was good, a ten-foot fan supplying same. (Inspected by Gavin.)

Wear Coal Company, Mine No. 18.—This company is operating mines in Missouri and Kansas. Mine No. 18 is located at Minden and was inspected on October 29th. The mine was in good condition on day of inspection; ventilation was good and sufficient, and the ropes, cages and safety catches were in good working order. (Inspected by Gavin.)

Charles Stone operates a small mine three miles east of Milford. No work was being done in the mine on the day I visited same and no inspection could be made. (Report by Gavin.)

Frank Faubion is one of the operators in the Milford coal field. The mine is entered by a drift and has natural ventilation. The condition of the mine is good. (Inspected by Gavin.)

W. J. Lavery opened a new slope mine at Liberal, working a 28-inch seam on the room and pillar plan. I inspected same on November 10th and found mine in good condition. (Inspected by Gavin.)

S. E. Mulkins and H. Smith opened a new mine on the David Bass land three miles east of Milford. I examined same on March 26th and found condition in and about the mine generally very satisfactory. (Inspected by Gavin.)

E. H. Short and J. Saunders operate a small drift south of Liberal. I inspected same on November 10th and found same in fair condition. (Inspected by Gavin.)

Pittsburg and Midway Mining Company.—Mine No. 8 operated by this company is located one and a half miles east of Midway, Kansas, in Barton county, Missouri. This is a new mine opened and equipped last summer. The mine is now working three shifts, the output of the mine reaching four hundred tons per day. This is the first mine operated by this company in the Missouri field, and judging from the present excellent management and equipment, the company will meet with success. I was called to this mine February 12th, on complaint made by miners that scales are in bad order. I made a careful test of the scales with a committee of the miners and found same to be absolutely correct. (Inspected by Hamil.)

Second Inspection.—I visited Mine No. 8 on September 22d, when ninety-one miners were at work in the mine. I made a careful test of the air currents circulating in various parts of the mine and found same good and sufficient for the number of men employed except in one entry. Many of the doors have warped since they were first put in and are now too loose. I ordered these reset, and when this slight defect is corrected the mine will have good ventilation in all entries. I also examined all ropes, cages and safety catches and found same in good order. (Inspected by Gavin.)

BATES COUNTY.

Atlas Coal Company.—The mine, located nine miles west of Rich Hill, is called the New Home Mine, around which has sprung up a small town named after the mine. The mine has shipping connections over the Frisco, Missouri Pacific and Kansas City Southern Railroads. The shaft is 270 feet deep, the coal is from 60 to 64 inches thick, overlaid with a slate roof. The equipments are of the very best. The engine house, engine, tipple, ropes, cages, safety appliances and machinery are all in good condition. Ventilation is procured by a fourteen-foot fan run by a belt geared three to one. A first-class fan house is built so the air can be reversed at a moment's notice by opening certain wooden doors, without interfering with the machinery. I made this inspection on March 9th, with the assistant inspector, Michael Gavin. We made a thorough investigation of the underground workings and were agreeably surprised to find this mine, which had suffered severe loss by fire, in such good condition. Under the former management a strike was inaugurated over a top-man, which lasted thirty days. During this time fire broke out in the mine, and the air courses caved in on both sides of the air shaft. This caused the gas to fill up back to the fire. The company was compelled to put false bottoms in both shafts, filling them up with dirt in order to smother the fire. Later four miners undertook to open one of the shafts in an effort to get out the iron rails, when one lit a match over the opening to light his pipe, and the result was an explosion of gas. The faces, arms and hands of the miners were burned, and the company fan-house and fan were destroyed. This caused me to close this mine down for a year.

Under the present management a new fourteen-foot fan was installed, which discharges an enormous volume of air out of the mine. It is an upcast, and every working face is supplied with a fresh current. Where there is any danger from gas, canvas is used to carry the air around the face of the workings, and every precaution is taken by competent and practical men to prevent accidents. Fire bosses examine the working places every morning before the men enter the mine. When the presence of gas is discovered the men are not allowed to enter their places. We found the entries and air courses in excellent condition, clean, high and well-timbered. The roads are sprinkled and kept damp in order to keep down the coal dust. All the old workings are kept open so the air can circulate in them, thus avoiding the accumulation of black damp or gas. This seam of coal is on the up and down hill order and makes haulage a very difficult problem. The company has installed an endless rope to pull the loaded cars of coal from an inside switch to the bottom of the shaft on the south side. This company employs a foreman, whose duty it is to look after all the underground workings in person. The present operators of this mine deserve success, for the task of opening it was no small one. At this visit seventy men and four mules were employed. (Inspected by Thomas and Gavin.)

Second Inspection.—Acting on advice received from the department at Jefferson City, that the Atlas Coal Company plant at New Home was entirely destroyed by fire, and that fortunately no one was in the mine at the time of the fire, I went to the scene of the disaster on October 9th to enquire into the cause of the fire and the extent of the loss. The fire originated in the engine house by the explosion of a coal oil bracket lamp, while the night man, J. B. Davis, was in the boiler room. The fire, when discovered by him, was beyond his control, and he had not even time to blow the mine whistle. The property loss is estimated from $35,000 to $40,000, with only about $3,500 insurance. The entire superstructure, including the head house, tipple, engine house, boiler house, along with the shaft timbers, were consumed by the flames. The timbers in the main shaft, 270 feet deep, were burned, and as a consequence the shaft caved in, making it impossible to re-open same. Some of the mine machinery and pit cars were saved by way of the air shaft, but this, in considering the great loss sustained, is but a trifle. The loss falls entirely upon the lessees and owners of the mine, and since it is a question whether the mine can ever be reopened, it is a matter of great regret, as the mine was fast becoming one of the best producers in Southwest Missouri. As will be seen from the preceding report, this mine has been exceedingly unfortunate in way of accidents, and much as the great loss to the operating company is deplored, it is gratifying that no men were injured and no lives were lost. (Inspected by Gavin.)

C. S. Goode operates the mine formerly owned and operated by the Amsterdam Coal Company. The mine was closed down for some time and is just now being put in shape to work. Date of inspection, October 28th. (Inspected by Gavin.)

Carr Coal Company, operating on the Robert Carr land, one and a half miles south of Rich Hill, had their mine in good condition on date of inspection, October 4th. I made a thorough examination of the interior of the mine, finding same satisfactory and the ventilation very good. (Inspected by Gavin.)

J. M. Duzan operates a mine on land owned by J. E. Conyer, near Sprague. The hoisting is done by horse power with two cages supplied with safety catches and in good working order. Ventilation is by furnace and very satisfactory. (Inspected by Gavin.)

Emmett Wear mine, one and a half miles north of Rich Hill, was visited October 4th, but found miners on a strike and mine closed down. (Report by Gavin.)

Frankenfield Coal Company operate south of Foster. The mine has a slope entrance, with furnace ventilation. The air in the mine was good and conditions in and about the mine generally satisfactory. I also tested the oil in use and found it up to the standard required. Date of inspection, October 14th. (Inspected by Gavin.)

E. Goret and Son operate a small slope mine one and a half miles south of Rich Hill, which I inspected on October 14th. Ventilation and condition of mine good. (Inspected by Gavin.)

O. T. Holland and Sons operate a shaft mine nine miles west of Rich Hill, known as the Holland Coal Company. Usually twenty-seven to thirty miners are employed in this mine, but on the day I made inspection, May 12th, only three men were at work. The mine was in fairly good condition, but lacked gate protection at the top. I ordered this safeguard installed at once. (Inspected by Gavin.)

August Marquard mine, located two miles north of Rich Hill, was inspected on October 15th. The mine had sufficient ventilation and the inner workings were in good shape. I learned that Mr. Marquard had no scales to weigh the miners' product, and I ordered that scales be provided without delay. (Inspected by Gavin.)

Perry and Wilson have a slope mine one and three-quarter miles north of Rich Hill, which I inspected on October 15th and found in satisfactory condition in every particular. (Inspected by Gavin.)

H. C. Richey mine, south of Rich Hill, was formerly worked as a strip pit, but it is now opened by a slope, and on day of inspection, October 14th, was in very good condition. (Inspected by Gavin.)

Roberts and Hare are working the Sunnyside mine, located on the Walnut Land and Coal Company land, a half mile south of Foster. The mine opening is by slope and work is done on the room and pillar plan. A gasoline engine is used to pull the product out of the mine. Ventilation, by means of a furnace, was very good. Date of inspection, October 9th. (Inspected by Gavin.)

J. V. Tatley mine, two and a quarter miles south of Worland, was visited on May 14th. I found mine closed, and no inspection was made. (Report by Gavin.)

Peoples' Coal Company, a new company, is operating the former Walnut Land and Coal Company mine, located one-half mile south of Foster. I examined the mine on October 13th. In testing the ventilation I found that the air currents were not strong enough to move the vanes of my anemometer. The company will correct this defect by sinking an air shaft. The mine has a drift opening and is worked on the room and pillar plan. (Inspected by Gavin.)

Heatherly and Barker mine in Worland, inspected October 26th. This mine has a slope entrance. The coal is full of faults and ranges from six to forty inches in thickness. Ventilation was very bad, and I ordered an air shaft sunk. This mine was formerly operated by Thompson Brothers. On October 14th, 1909, W. P. Thompson lost his life in this mine from the effects of damp or powder smoke while at work in the mine. (Inspected by Gavin.)

L. W. Decker is opening an old mine about three miles south of Amsterdam. I visited the mine in October. The mine will not be in shape to produce coal for some time. (Inspected by Gavin.)

The following strip mines in Bates county were examined in October, and found in satisfactory condition:

George Craig, mine near Worland.
J. A. Harris, mine near Worland.
S. S. Sommers, mine near Worland.
J. D. Morehouse, mine near Worland.
C. B. Spencer, mine one-half mile northeast of Rich Hill.
J. M. McCombs, mine on McCombs estate land, one-quarter mile northeast of Rich Hill.
Shelton and Hamilton, mine one and a half miles south of Foster. (Inspected by Gavin.)

BOONE COUNTY.

Davis and Watson operate a mine four and a half miles north of Columbia. The coal is reached by a shaft 110 feet deep, and horse power is used for hoisting. Ventilation and underground workings are in good condition. A ten-foot Ottumwa fan has recently taken the place of the furnace to supply ventilation. (Inspected by Richards.)

W. R. Prather operates a mine four miles north of Columbia. On date of inspection, May 18, 1909, the mine was not in a satisfactory condition. The air ways were choked by falls of rock, and other passage ways were muddy and wet, the mine in general being in bad condition. I notified the foreman to clean up the air ways and to make some effort to put the mine in a more healthy condition. (Inspected by Richards.)

A. S. Ridgeway operates a mine three miles north of Columbia. The product of the mine is consumed locally. The coal is reached by a slope and worked on the room and pillar plan. On date of inspection, May 18, 1909, I made a thorough inspection of the mine and found no cause for complaint about manner of working and general condition. I have since learned that the mine has been idle since July, 1909, and remained so until the close of the year. (Inspected by Richards.)

CALDWELL COUNTY.

Caldwell Coal Company, Hamilton, inspection by H. J. Hamil, January 27, 1909. This company operates a mine two miles east of Hamilton on twelve hundred acres, owned by the Penney estate and D. Judd and Company. I found the interior of the mine on date of examination in good condition and all safety appliances in good working order. The improvements since my last visit consist of two new hoisting ropes, forty feet of the main shaft retimbered and part of the escape shaft also retimbered.

Second inspection on July 29, 1909, by Robert Richards.—I made a thorough inspection of the interior and exterior workings of the mine and found everything in good condition.

CALLAWAY COUNTY.

Fulton Coal Company, Fulton. Mine inspected October 26, 1909, and found in good, healthy and safe condition. (Inspected by Richards.)

Fulton Fire Brick Company, Fulton.—Mine inspected October 27, 1909, and found in poor condition. There was a lack of air and the sanitary condition was far from good. I pointed out these defects, with instructions to correct at once. I also examined ropes, cages, safety appliances and scales and found same in good working order. (Inspected by Richards.)

Harris and Trigg, Fulton.—Mine inspected October 27, 1909, and found in good condition. (Inspected by Richards.)

R. M. McCowan, Guy mine, Stephens Store.—Mine inspected October 28, 1909, and found in good condition. The department has been notified that mine has closed down, Mr. McCowan retiring from the coal business. (Inspected by Richards.)

C. M. Nickolson, Stephens Store.—Mine inspected October 28, 1909, and no fault to find with manner of working, sanitary condition and safety of mine. (Inspected by Richards.)

J. F. Reed, Fulton.—I inspected this mine on October 27, 1909, and found same in poor condition. I gave orders to clean up and to improve air in mine. The ropes, cages and scales were in good order. (Inspected by Richards.)

E. Skelley, landowner and operator of a mine at Stephens Store. Date of inspection, October 28, 1909. Condition of mine good. (Inspected by Richards.)

J. W. Sulzer operates a mine on the William Sims land, near Fulton. I inspected the mine on October 26th and found same in very good condition, and full volume of air furnished by fan at working places. (Inspected by Richards.)

J. W. Simmons operates a mine one-half mile southwest of Fulton, on land owned by the Fulton Fire Brick Company. I made an inspection of this mine on June 22, 1909. The coal is reached by a slope and is worked on the long wall system, and ventilation is by furnace, which is giving poor results. The inner workings of this mine were being driven to connect wth the Harris mine, and when this connection is made the ventilation and general conditions in the mine will be greatly improved. (Inspected by Richards.)

Second Inspection October 27, 1909.—On my second visit to this mine I found the air greatly improved, the connection with the Harris mine having been made. An escape shaft was being sunk to connect with the Harris mine. (Inspected by Richards.)

David Smith operates a mine one mile south of Fulton. Date of inspection June 22, 1909. The mine is worked on the long wall plan and a four-foot fan was in use to supply ventilation, but with poor results. Mr. Smith has under way a new coal mine, opening by a slope. When completed the old works will be abandoned, therefore, did not insist on improvements in old mine. (Inspected by Richards.)

John Throp operates a mine on the Sims land, near Fulton, and on date of inspection, October 26, 1909, had his mine in good and healthy condition. (Inspected by Richards.)

Wilson Butler opened a new mine near Fulton. On date of my visit, coal had just been reached. The mine opening is by slope and the ventilation is by natural means. The coal seam is thirty inches thick. Two miners were employed. (Inspected by Richards.)

CHARITON COUNTY.

On October 22, 1909, I visited the mining section in Chariton county, near Keytesville, and found that mining is done on a small scale and principally on the strip pit order. I visited a number of mines and found all in fairly good working order, and as safe as can be made. The mines of the following operators were inspected on the above-named date: Lizzie M. Collett, Jesse R. Dooley, William Drew, Felix Langer, Kinzley Brothers and S. E. Watson. The Drew mine and the Watson mine have been abandoned since inspection was made. (Inspected by Richards.)

CLAY COUNTY.

Missouri City Coal Company.—This company owns two acres of land in the suburbs of Missouri City, Clay county, and controls, under mining lease, 640 acres of coal land adjoining the tract upon which the shaft of the company is located. Complaint was made by miners employed in the mine that the ventilation was poor and insufficient. Upon receipt of notice I went to the mine and made a careful examination of the mine on April 20th. I found the mine ventilated by a ten-foot fan; two currents of air were forced through the workings to a point near the center of the works where these currents united and returned in one volume to the main shaft. More than the required quantity of air was passing in each current on day of inspection. Upon inquiry into the cause of complaint made by the miners, I learned that through accident or neglect, the doors that conduct the air currents through the working places are sometimes left open. This makes the circulation of the air currents defective and prevents the return of the current to the upcast before passing through all parts of the mine, as intended. There are two passage ways from the shaft bottom to the escape shaft. One of these is closed with a brattice, which can be removed if necessary without much trouble. The other passage way is very wet and disagreeable to travel over. The company proposes to improve this passage way and to make other changes in order to increase the volume of air. I found all safety appliances in good order, the scales in perfect condition, and the mine generally in good working condition. This is the only coal mine operated in Clay county. On date of inspection 119 miners, five drivers, sixteen day men and five top men were employed. The haulage in the mine was done by seven mules. The greater part of the product of the mine is shipped to Kansas City, a distance of twenty-one miles, and there marketed. (Inspected by Gavin.)

DADE COUNTY.

W. A. Stout mine, one mile south of Slyvania, was inspected on November 9th. Mine has a shaft opening twenty feet deep and is worked on the room and pillar plan. Twelve men were at work in the mine on day of inspection. Ventilation is natural. The product is pushed to the shaft and hoisted by horse power. The mine was in good condition. (Inspected by Gavin.)

Hickman Mine, owned by O. H. Hickman of Golden City, was not being worked when I visited this field in November, and no inspection was made. Report by Gavin.

Paul Lily mine, operated by L. V. McCluey and located one mile south of Sylvania, was inspected on November 10th and found to be in good condition. (Inspected by Gavin.)

Sumner mine near Sylvania, operated by J. H. Sumner, was inspected on November 9th and found in good condition. The product of this mine is consumed locally. On day of inspection seven men were employed in the mine, but the output of the mine for the year was not reparted to the department. (Inspected by Gavin.)

Conklin and Wines, operating the Star mine one and a quarter miles from Sylvania, had their mine in fair condition on date of inspection, November 9th. The product of the mine for 1909 was not reported. (Inspected by Gavin.)

G. G. Jenkins, one of the small operators near Sylvania, had his slope mine in satisfactory condition on day of. inspection, November 9th. (Inspected by Gavin.)

GRUNDY COUNTY.

Trenton Mining Company, Mine No. 3, Trenton.—I visited this mine on June 2, 1909. Coal is reached by a shaft 225 feet deep and is worked on the long wall plan. The mine is equipped with electric hoisting machinery, the current to operate same being furnished by the Citizens' Gas and Electric Company of Trenton. The company recently built two storage chutes, and screens have been installed for the grading of coal. I examined the interior of the mine, also the cages and safety appliances, and found same in good condition. The mine in general has the appearance of good care and management. (Inspected by Richards.)

HENRY COUNTY.

Bowen Coal Company, a corporation operating three coal mines in Henry county. Mines Nos. 2 and 4 are located at Bowen, five miles west of Windsor. Mine No. 3 is in Johnson county, but connected with mine No. 2, and the coal mine No. 3 is hoisted at mine No. 2. On date of inspection, June 15th, when the mines were not operated at full force, 179 miners were at work, while during the winter season 225 to 250 miners are employed.

At mine No. 2 the air current was good, but damp was issuing from some of the old works. Mr. Daley, the mine foreman, was placing tight stoppings in all places not used for air passages. This will seal the places in which the damps are generated. At mine No. 4 a new escape shaft was among the recent improvements made. I examined all underground works and found everything in good condition. All ropes, cages and safety catches were inspected and found in good order. (Inspected by Gavin.)

Second Inspection.—On October 18th a complaint reached the Mine Inspection Department at Jefferson City that the air courses in mines Nos. 2 and 3 of the Bowen Coal Company were in bad shape. I immediately went to the mines and made inquiry into the matter complained of and examined the air courses. I found that many of the cross cuts in both mines between the rooms were much too small for the quantity of air required to pass through them. Otherwise the mines were in good condition. (Inspected by Gavin.)

Third Inspection.—In November I was requested by Mr. Bowen of the Bowen Coal Company to visit mines 2 and 3 again and to test the ventilation. The miners in these mines had suspended work because the mines were not properly ventilated. The anemometer tests showed the volume of air to be much greater than required by law in each of the mines. This was reported to Mr. George Manuel, district secretary of local U. M. W. of A. A meeting of the miners was held, at which the miners stated they had no fault to find with the ventilation after the fan had run long enough to clear the mine of smoke and damps. The trouble was due to the fact that the fan was not started soon enough to clear the mine before the men entered to go to work. I called the management's attention to this just complaint and received the assurance that the fan would be started earlier and that there would be no further cause for complaint on this account. (Inspected by Gavin.)

Fourth Inspection.—In answer to a telegram from the secretary of the miners union at Bowen, I again visited these mines on December 5th, for the purpose of making an inspection of the abandoned works on the east side of mine No. 2, and the surface above that part of the mine. There is a stream that drains a large area of land which passes over the abandoned works on the east side. The covering above the coal at several places close to this stream is very light, not more than twenty feet in places. Some time ago this stream broke into the mine through one of the caved-in rooms and, while the mine did not fill with water at that time, it was feared that should it occur again, the lives of the miners in the mine would be endangered. Mr. Bowen, the superintendent of the mine, and the miners, held a conference in regard to this matter and agreed that the State Mine Inspector be called to give his advice. I carefully examined the conditions and noting the bottom of the shaft to be lower than the workings inside, and that this would be the first part of the mine to fill with water should an accident of this nature occur, I recommended that an escape shaft be sunk on the east side of the mine for the benefit of the miners. Mr. Bowen immediately approved of the plan and before I left Windsor the engineer had started to work locating a point for the new shaft. (Inspected by Gavin.)

E. A. Barnhardt mine, four miles southeast of Clinton.—I inspected this mine in June. The mine had been worked on the room and pillar plan. At time inspection was made the pilars were being drawn and this shaft will soon be abandoned. The ventilation was bad. An air stack, which was recently blown down, was ordered replaced. (Inspected by Gavin.)

Deepwater Mercantile Company operates a mine known as the Brush Coal Company mine, located three and a half miles east of Deepwater. On day of inspection, August 26th, the mine was very wet and will probably soon be abandoned. A new mine has been sunk by this company and will soon be in operation. (Inspected by Gavin.)

Church Coal Company mine, one half mile southwest of Browington, is a new mine in Henry county. The mine has a shaft thirty-five feet deep and horse power is used for hoisting. The coal is worked on the room and pillar plan and blasted off the solid. Inspected by H. J. Hamil, January 12th, and condition good.

G. A. Riggles and Company mine, one and a half miles east of Deepwater, was inspected September 11th. The mine was very wet, otherwise conditions were fair. (Inspected by Gavin.)

Kennedy and Thompson's Clover Leaf mine, a half mile south of Deepwater, was inspected September 11th and conditions were good. An escape shaft fifteen feet deep was recently sunk. (Inspected by Gavin.)

W. S. Dickey Clay Manufacturing Company.—This company has a mine east of Deepwater on forty acres of land owned by the company. Everything in and around the mine is new and up-to-date. The coal seam will average thirty-six inches in thickness, and the product of the mine is hauled in wagons to the company's tile works at Deepwater. Date of inspection, January 13th, H. J. Hamil, inspector.

Second Inspection, September 8th, Michael Gavin, Inspector.—I made a thorough examination of this mine and found everything in excellent order. Ventilation was good, and all ropes, cages and safety catches were in good order. A new escape shaft was recently sunk.

H. T. Demaree operates a shaft one mile northeast of Deepwater. The product of the mine is consumed at the tile factory in Deepwater. At date of visit, January 11th, only three men were employed. All safety appliances were in good condition. H. J. Hamil, inspector.

James England's mine, one mile east of Deepwater, was inspected September 8th. Ventilation was good and the safety appliances were in good order. (Inspected by Gavin.)

W. E. Hughes operates a mine two miles south of Windsor, which I inspected on June 17th. The shaft now in use will be abandoned in a few weeks and a new shaft will be sunk. (Inspected by Gavin.)

Hurst Coal Company of Deepwater, operate a mine east of Deepwater. Date of inspection, January 13th, and condition of mine very satisfactory. The product of this mine is hauled over a tramway one-half mile long and loaded on cars for shipment to points north and south. (Inspected by Hamil.)

Second Inspection, September 9th.—Ventilation was good except in one entry. Work to remedy this was being done at time inspection was made. In other respects the mine was in good condition. A new escape shaft, 34 feet deep, was recently sunk by the company. (Inspected by Michael Gavin.)

Lewis Coal Company.—This mine is located one mile north of Lewis, on land owned by D. B. Pigg and others. The mine is entered by a shaft fifty feet in depth. The power employed is steam and compressed air. The mining is done by two Harrison-Rand punching machines, run by compressed air. Date of visit, January 23d. Thirty miners and eight others were employed The mine is ventilated by a furnace, which is giving satisfaction. All machinery, ropes, cages, safety catches and other safety appliances were found in good order. (Inspected by Hamil.)

Second Inspection, June 24th.—Thorough examination was made of mine and everything found in excellent condition. (Inspected by Gavin.)

Drake and Thorpe mine, on the Norton land, was inspected June 24th. The mine has a shaft opening fifty feet deep and five miners were employed. The owners want to increase the number of miners, but were informed that this could not be done lawfully until an escape shaft had been sunk, giving the mine another outlet. (Inspected by Gavin.)

Parks Coal Company mine is located two miles west of Calhoun. The mine is entered by a slope and is worked on the long wall plan. Date of inspection, January 22d, when interior of mine was in good condition. (Inspected by Hamil.)

Second Inspection, June 23d.—Examined interior of mine, and conditions were satisfactory. (Inspected by Gavin.)

W. D. Reese operates a mine southwest of Deepwater. The product of the mine is hauled in wagons to Eaton Switch, where it is loaded on cars and shipped to points along the Kansas City, Clinton and Springfield railroads. On date of visit, January 11th, I found the mine in good condition. All safety appliances were in good order. (Inspected by Hamil.)

Second Inspection, September 11th.—Made thorough inspection and found mine in good condition. (Inspected by Gavin.)

William Rust operates a mine six miles southwest of Deepwater. The mine is operated during the fall and winter months to supply local demands. On date of visit, January 14th, five miners were employed. (Inspected by Hamil.)

Standard Coal Company is operating on the George Pemberton land, three miles southwest of Deepwater. I inspected this mine August 26th and found everything in and about the mine very satisfactory. (Inspected by Gavin.)

JOHNSON COUNTY.

American Fuel and Development Company.—The mine of this company is located one mile northwest of Chilhowee. This mine has been a source of expense to the stockholders and an annoyance to the mine inspectors since it has been in operation. On January 20th I visited this mine and made a thorough examination of the interior workings. I found the plan of working changed from long wall to room and pillar. The great trouble with the mine has been that but one escape had been provided, and the inspector could not, under the law, allow more than five men to work in same. I am glad to report that on date of this inspection this matter has been remedied and the company can now employ any number of men. A good current of air is now passing between mines Nos. 1 and 3, having been connected. I found several old abandoned rooms not properly sealed up, and I ordered that this be promptly atended to. I also recommended that a door be placed in the main entry to divide the air current and conduct it around the working face on both sides of the mine. I inspected all safety appliances and found same in good working order. One cage was defective, and this was ordered repaired. (Inspected by Hamil.)

Frank Millard is operating the J. H. Christopher mine, located eight miles southeast of Warrensburg. The mine has a shaft opening twenty-three feet deep. Mr. Millard is at present driving an entry from a slope to the shaft, about a hundred yards distant. Date of inspection, May 27th. (Inspected by Gavin.)

John Hardin is one of the small operators in Johnson county. I inspected his mine, known as the Miley mine, on May 27th, and conditions were generally satisfactory. (Inspected by Gavin.)

Sutherland Coal Company.—The mine operated by this company was sunk last summer and is equipped with steam engine and boiler and fan for ventilation. The mine is located near Sutherland, on the M., K. & T. Railroad, and is entered by a shaft 180 feet deep. A switch to the mine has been graded, but up to the present time no rails are laid. On date of visit, January 21st, I found same in fairly good condition. Ten miners and three helpers were employed. (Inspected by Hamil.)

Second Inspection, December 5th.—I made a thorough examination of everything in and about this mine and found that proper means of escape for the number of men had not been provided for. I therefore ordered the number of men reduced to five men until an escape shaft is sunk. I also ordered the cage bonnetted with boiler iron. (Inspected by Gavin.)

LAFAYETTE COUNTY.

Edward Aull Coal Company is incorporated under the laws of this State, and controlls 160 acres of coal land two miles east of Lexington. The Edward Aull mine, a drift worked on the long wall plan, was inspected November 16th. On day of inspection thirty-four miners were employed and the mine was found in very good condition. A ten-foot fan was giving good results, the anemometer showing the volume of air to be 9,000 cubic feet per minute at the fan and 6,000 cubic feet at the first split. (Inspected by Gavin.)

Bonanza Coal Company.—The mine operated by this company is located a quarter mile east of Higginsville. The shaft is 72 feet deep, and ventilation in the mine is provided by an eight-foot fan operated by a gasoline engine. The mine was in very good condition on date of inspection, March 16th. The company also operates a rock crusher near the mine, converting the rock taken from the mine into suitable sizes for concrete work. (Inspected by Gavin.)

Bell and Greer Mine, located one mile south of Lexington, was inspected February 4th and found in good condition. (Inspected by Hamil.)

Second Inspection, March 13th, by Michael Gavin, and everything found in satisfactory condition.

Bell mine, operated by Warren Radd, is a part of the Bell and Greer mine, and it seems to me should be reported as one mine. Bell and Greer market the product of the mine, which is small, and the mine is worked principally for the purpose of supplying ventilation for the Bell and Greer mine just south of it. The air current passing through the Bell is the same current which provides ventilation for the Bell and Greer mine. The mine is entered by a drift opening and was in fair condition at the tme inspection was made, March 12th. (Inspected by Gavin.)

Corder Coal Company is operating a shaft mine one-half mile south of Corder. I inspected same December 10th, found ropes, cages and safety catches in good order and mine in excellent condition. (Inspected by Gavin.)

Canterbury and Griffith operate a mine one mile northwest of Higginsville on Henry Hader land. Date of inspection, April 27th. Mine was in good condition. (Inspected by Gavin.)

Thomas J. Clay has a drift mine four miles southwest of Higginsville. Six miners are employed, and the output of the mine is consumed locally. Date of inspection, December 11th; condition of mine, good. (Inspected by Gavin.)

Duncan Mine, operated by Harvey Duncan and located west of Lexington, was inspected August 16th, and everything found in satisfactory condition. (Inspected by Gavin.)

Dover mine, operated by the Dover Coal Company, is located one mile east of Dover. I visited the mine August 21st and found the mouth of the drift partly closed by a fall of rock, and no inspection of the mine workings could be made. I returned to this mine on November 17th and found drift open with fourteen men employed therein. The mine was in fair condition, and the ventilation was very good. (Inspected by Gavin.)

Farmer's Coal Company, one of the big operating companies in Lafayette county, working two mines southwest of Higginsville and employing over 150 men.

Mine No. 1 has a shaft opening 80 feet deep. The coal is worked on the long wall plan and the mining is done by electric mining machines. On date of inspection, July 11th, the mine was in good condition and ventilation was fair. The eight-foot fan now used will soon we replaced by a larger fan. (Inspected by Gavin.)

Mine No. 3. was inspected July 12th, and found in good condition. This mine is also worked on the long wall plan and electric coal cutting machines are in use. Ventilation is all that could be desired. (Inspected by Gavin.)

Second Inspection of Mine No. 3, October 5th.—I received complaint from miners employed in mine No. 3 that insufficient volume of air was circulating in the mine. I at once made tests of the air passages and found the ventilation to be fully up to every requirement. Some leaks were found in the brattice between the air course and the main shaft, but not sufficient to impair the ventilation of the mine. Some of the miners are using a poor grade of oil. (Inspected by Gavin.)

Higginsville Coal Company operates a drift mine on the Meinershagen land two miles south of Higginsville. This company keeps its mine in good shape at all times. I visited the mine on February 5th, finding 48 men at work under first-class conditions and due regard for safety and sanitation. The coal from this mine is hauled over a tramway 300 feet to a spur track from the Missouri Pacific and Chicago and Alton Railroads. (Inspected by Hamil.)

McGrew Mining Company operates three mines west of Lexington. The mines are known as the Graddy mine and McGrew mines Nos. 1 and 2. The McGrew mines are located three miles west of Lexington, and might be classed as one mine, as both openings are joined by one working face. Mining in all three mines and haulage in two of the mines is done by electricity. The electric power plant is located at mine No. 1. The machine shop, equipped for repair and construction work, is also located at mine No. 1. I inspected these mines on March 22d, and the underground workings, as well as the top structures and all safety appliances, were in excellent condition. (Inspected by Gavin.)

Independence Coal Company.—This company has a mine one mile east of Napoleon, on the Lexington Branch of the Missouri Pacific railroad. I made an inspection of the mine on March 16th, finding the ventilation to be very good. The law with regard to safety appliances was strictly complied with, and the conditions of the underground workings were satisfactory in every respect. (Inspected by Gavin.)

Looney mine, located one mile west of Higginsville, is operated by Richard Sebastian. I inspected this mine on May 6th, when fifteen miners were at work. The mine has sufficient ventilation for the number of men at work and the underground conditions were fairly good. The operator was negligent in one particular, however, in that the shaft was not securely fenced off. The operator's attention was called to this violation of the law, and he was instructed to properly protect top at once. (Inspected by Gavin.)

Labor Exchange Company owns and operates a mine one and a quarter miles west of Wellington, on the Lexingtŏn Branch of the Missouri Pacific railroad. On day of inspection, March 16th, forty-eight miners were employed. The mine was in very good condition and all safety requirements are complied with and kept in good order. (Inspected by Gavin.)

Mayview Mine, operated by B. F. Carey, has a shaft opening 140 feet deep. I inspected this mine November 11th. The ventilation was very bad on the day inspection was made, but believe same was due to very light fire in the furnace. There were twelve men at work in the mine, and I called the operator's attention to the defective circulation of air and the cause. (Inspected by Gavin.)

Ben Mosby is operating a mine one-half mile east of Waterloo. This mine was originally worked by the Labor Exchange Company. It was leased by Mr. Mosby, and he is at present engaaged in getting the mine in shape for operation. Date of visit, March 16th. (Inspected by Gaavin.)

Summers Mine. This is one of the small mines operated in Lafayette county, near Corder. The mine has a drift opening and is worked on the long wall plan. Michael Sommers, the operator, is a practical miner and knows how to keep his mine in good condition. Only four men were employed on date of inspection, December 10th. (Inspected by Gavin.)

Stoll Brothers mine, two miles east of Higginsville, was visited on July 12th, but the mine was idle and no inspection was made. (Report by Gavin.)

Plattenberg Mine. This mine is located south of Lexington, just outside of the city limits. The mine was inspected February 4th, and I found everything in and around the mine satisfactory. The mine is entered by a drift, and ventilation is produced by furnace, with good results. (Inspected by Hamil.)

Second Inspection, March 19th.—I visited this mine on date mentioned, and was well pleased with manner in which mine was kept. Ventilation and conditions were very good. (Inspected by Gavin.)

Lanning and Harris mine is located one and a quarter miles east of Wellington. The coal seam is eighteen inches thick and is mined by electric machines. On day of inspection I found 72 miners, 9 drivers, 11 day men, 13 top men and 13 mules at work. The mine is entered by a drift, and is worked on the long wall plan. Ventilation in the mine is good, a six-foot fan supplying a sufficient volume of air, which splits in two currents at the center of the workings. The underground conditions are very good.

Second Inspection.—The miners at work in this mine complained of the unsafe condition of the mine and requested me to make special inspection of the mine. I immediately went to the mine, August 20th, but found the mine closed, as I was told, for the purpose of making repairs and installing motor haulage. No inspection could therefore be made. (Report by Gavin.)

Third Inspection.—On September 18th I was again called to this mine by the miners who complained of the bad ventilation in parts of the mine. I made a careful examination of the air currents and found same in some parts of the mine not as good as same could and should be. I requested the mine foreman to divide or split the air on a road farther east and to make some repairs on the fan house, which I believe will give a sufficient current of air on all roads in this mine. (Inspected by Gavin.)

Fourth Inspection.—Upon complaint made by the miners of this mine that bad oil was used, I again visited the mine on November 13th, and tested the oil. I found that the oil was just as represented by the manufacturers and properly labeled on the barrels in which same was shipped. The test showed the specific gravity to be 24 degrees Tagliabue, thus meeting the requirements of the law. (Inspected by Gavin.)

Sipe mine, located on land owned by the Plattenburg and Wallace Coal Company, near Lexington, is operated by C. C. Sipe and Son. I inspected the mine February 4th and found everything in first-class condition, with all safety appliances in good working order. (Inspected by Hamil.)

Second Inspection, March 19th.—I made an inspection of the Sipe mine and found the mine in very good condition. Ventilation in the mine was good. (Inspected by Gavin.)

Salt Fork Mine, located on the Charles Lieser land, three-quarters mile south of Corder and operated by the Diamond Coal Company, was inspected October 9th. On date of inspection all ropes, cages and safety catches were in good order and the underground condition of the mine was as good as it could be made. (Inspected by Gavin.)

Summit mine was inspected on November 19th, on complaint of the miners. I made an inspection of the mine and found same in first-class condition, except that two doors were defective, allowing too much air to pass in to the bottom of the shaft. This defect was pointed out to the foreman and he promised to remedy same at once. (Inspected by Gavin.)

Van Guilder mine, operated by E. M. Van Guilder, and located two and a half miles west of Lexington, is a drift mine, furnishing work for fifteen miners. I examined the mine on November 19th and found same in best possible condition. Mr. Van Guilder recently built a weighing office and blacksmith shop, the cost of the improvements amounting to $500. (Inspected by Gavin.)

The Wilson Coal Company gives employment to seventy-five miners. The mine is located three-quarters mile southeast of Corder. All ropes, cages and safety catches were in good order and the mine was in splendid condition on date of inspection; October 9th. (Inspected by Gavin.)

Sam Wright's mine, south of Lexington, was inspected March 18th. The mine was in fair condition, except as to ventilation. Curtains to direct the air currents are necessary, and this improvement was promised the inspector, to be made immediately. (Inspected by Gavin.)

John Wegener is operating a small coal mine near Higginsville. Only two miners are employed, and the product is sold locally. I inspected the mine on May 6th and found the mine to be in good condition. (Inspected by Gavin.)

Western Coal and Mining Company.—This is the largest coal operating company in Lafayette county, and one of the largest in the State. The company is incorporated under the laws of Missouri with a capitalization of $1,000,000. The general offices of the company are located in St. Louis. Four mines are operated by this company, south of Lexington, in Lafayette county, known as Valley, Midway, Summit and South mines. These mines are located on the Valley spur, a switch built by the mining company. On date of inspection, April 15th, 750 men were employed in and about these mines.

Valley Mine is entered by a shaft eighty-seven feet deep, and is ventilated by a twelve-foot fan. The coal seam is twenty inches thick and worked on the long wall plan. Recently an entry was made connecting Valley mine with Midway mine, and through this connection a good high passageway is secured from one mine to the other. Electric mining machines are used. The mine is well ventilated and in good condition. (Inspected by Gavin.)

Midway Mine has a shaft opening 142 feet deep, and the coal seam and plan of working is the same as that in the Valley mine. The main electric power plant and machine shops of the company are located at this mine. The mine is ventilated by a twelve-foot fan, and is in good condition. (Inspected by Gavin.)

Summit Mine has a shaft opening 168 feet deep. The same plan of work prevails in this mine as in the other mines of the company. Ventilation and general underground conditions are good. (Inspected by Gavin.)

South Mine is located at the end of the spur switch, four and a half miles south of Lexington. The shaft is 180 feet deep. The coal seam and plan of working differs in no way from the other three mines, and the condition of the mine is in every way good. (Inspected by Gavin.)

Waverly Brick and Coal Company.—Mine located one mile west of Waverly. This mine is entered through a shaft 135 feet deep, the coal seam is nearly four feet thick and is worked on the room and pillar plan. The mine is in fair condition, and the safety appliances are in good order. This company has equipment for a large production. At the present time the mine gives off some gas. A new entry is being driven and when completed, will increase the volume of air now passing the working places. On date of inspection, August 19th, twenty-nine miners, seven day men and five top men were at work. (Inspected by Gavin.)

Second Inspection.—Local Union No. 1089, U. M. W. of A., through its secretary, complained to Governor Hadley under date of September 7, 1909, that this mine is gaseous, and that four men have received injuries on account of same, but that nothing is being done to protect the men at work in the mine. On receipt of this letter I went to Waverly and made a careful examination of the mine and failed to find gas in any of the rooms or entries. The worst feature about the mine, which gives cause for complaint, is the fact that shots are fired at noon. I instructed the mine foreman to have the fire-boss carefully examine the mine before the miners are permitted to return to work. A rumor that several men had been burned by gas in this mine reached me prior to the date of the complaint made to Governor Hadley, and caused me to visit this mine on September 1st to investigate the matter. The mine was not in operation at this time, but I learned that two men were slightly burned in an entry. I requested the superintendent to close all cross cuts between the rooms except the last cross cut, unless the last cross cut be too narrow or not sufficient air passing to remove the gas. And in rooms and entries where gas was given off in such amount as to be considered dangerous to use brattice cloth. I was called to the mine shortly afterward by the mine superintendent for the purpose of seeing that my instructions were carried out. I found that not all cross cuts were closed, but that the ventilation was good and no gas was discovered by me in any part of the mine. (Inspected by Gavin.)

LINN COUNTY.

Chas. Barr Mine, one and a half miles east of Brookfield. This mine has a shaft 130 feet deep and is worked on the long wall plan. The mine is in good condition. The product is consumed locally. Date of inspection, May 11. (Inspected by Richards.)

Bucklin Coal Company, three-fourths of a mile west of Bucklin. At the time of visit the mine was closed down for the summer, as the output is sold to home trade. The mine is owned and operated by a stock company, composed of citizens of the town of Bucklin. No inspection could be made. Date of visit, May 11th. (Richards.)

W. E. Crandall mine, one and a half miles east of Brookfield. This mine is located on land owned by H. D. Burdall. The coal is reached by shaft and is operated on the long wall plan with furnace ventilation. Hoisting is done by horse power. The mine was in fairly good condition on date of inspection, May 12th. (Inspected by Richards.)

Landreth Coal Company, Marceline.—Inspected May 6, 1909, and same found in good condition. On November 17th the Mining Department received the following letter of complaint:

MARCELINE, Mo., November 17,1909.

Mr. Robert Richards, State Mine Inspector, Jefferson City, Mo.:

Dear Sir: I was instructed by Local Union No. 177, U. M. W. of A., to write you to come to Marceline at once and make inspection of the Landreth coal mine. The mine was reported to the Local as unsafe for men to work in; the escapement has been shut off and the company refuses to open same; also the main shaft is reported not to be in very good condition.

Signed: L. E. SHELDON, Secretary.
R. T. WASHBURN, President.

I visited the Landreth mine on November 27, 1909, and examined the travel road to the escape shaft; also, the main shaft. I found the travel road to escape shaft in fair condition, but the ladder in the escape shaft was out of repair, and I instructed Mr. Landreth to put same in good order. I also ordered him to have rests made at intervals of twenty-five feet up the ladder. I found the cages in the main shaft in bad condition and I gave instructions not to allow the men to ride on same until cages had been made safe and in good condition. The ventilation in the mine was good and the underground workings were in healthy condition. (Inspected by Richards.)

Marceline Coal and Mining Company, Marceline.—Mine No. 1 inspected May 7, 1909. Mine in general found to be in good condition. Supply of air in all parts of mine sufficient and good. (Inspected by Richards.)

Mine No. 2, inspected May 6, 1909.—Mine is equipped with first-class hoisting machinery; ventilated by a twelve-foot fan, excellent results are obtained except in one portion of the mine, where I found a tight corner where the circuit of air was broken, which resulted from a fall. The exit to the escape shaft was obstructed by falls of rock, but the foreman had men at work removing the obstruction. (Inspected by Richards.)

Second Inspection of Mine No. 2.—My attention was called to bad condition of travel road to the escape shaft, by the miners at work in the mine; complaint was also made about the safety catches not being in good order. I went to this mine on December 8th, accompanied by the mine committee, and made a thorough inspection of the mine. The air-course to the escape shaft on the east side was found in bad condition, the roadway in a number of places being obstructed by mine debris. On the west side the travel road was completely blocked, making it impossible to get through. The ladder in the escape shaft was covered with decayed matter and unsafe. The safety catches in use I did not consider safe and in no shape to do the duty expected of them in case of rope breaking. The complaint of the miners was justifiable, and I gave written notice to repair all defects and to put air course in good condition within a reasonable time. The awful disaster at Cherry, Illinois, has caused a feeling of unrest among the miners, and complaint is now made of things which ordinarily are allowed to go unnoticed. (Inspected by Richards.)

L. R. Williamson operates a mine two miles south of Brookfield. I examined this mine on May 12, 1909, and found same in good order and in safe condition. (Inspected by Richards.)

G. C. Wine operates a small mine about two miles east of Brookfield, employing four or five miners the year round. Horse power is used for hoisting, and ventilation by furnace. I found the mine in fair condition on date of inspection, May 12, 1909. (Inspected by Richards.)

LIVINGSTON COUNTY.

Cox Mine.—There are two small mines located four miles north of Chillicothe, operated by J. O. and J. C. Cox. I visited these mines on January 29th and found same in good condition. (Inspected by Hamil.)

Second Inspection.—I made a thorough inspection on June 1, 1909, and found everything in good order. (Inspected by Richards.)

William Fulwood operates a mine two miles north of Mooresville. This mine was formerly operated by George T. Walters. On date of inspection, January 23, 1909, Mr. Fulwood was engaged in removing the water from the mine with the aid of a gasoline pump. The mine has a shaft entrance fifty feet deep, but Mr. Fulwood intends to abandon the shaft and will open up a slope near by. This mine was operated for a number of years by different persons without much success. Mr. Fulwood is a practical miner and has spent his entire life in and about coal mines. If this mine can be operated successfully, Mr. Fulwood will certainly do so. Mine was idle on day of inspection. (Inspected by Hamil.)

MACON COUNTY.

Central Coal and Coke Company.—This is the largest coal mining company in the State, operating four mines in Macon county and one mine in Ray county. Last year they operated five mines in Macon county, but one mine, No. 10, has been worked out and abandoned. The company owns and controls 2,672 acres of coal land.

Mine No. 61, located one mile northeast of Keota, inspected January 27. I inspected this mine on the above-named date and made examination of the top structures, ropes, cages, safety appliances and machinery. I found all in good working order. This mine has a greater excavated territory than any other mine in the State, and for the last four years ventilation has been the chief concern of the operators. A great volume of air is forced into the mine, but by the time it travels the many miles through and over uneven air-courses, the rubbing surface and resistance uses up a great quantity of the life-giving qualities of the air, and in extreme ends the miners do not get the air in its purest state. To overcome this defect another air shaft has been sunk at the head of the workings on the east side, which will cut the distance for the air to travel to one-half, and the results have been wonderful. The company is doing all in its power to get direct connection from the west side to the east by a pair of south entries, and this will give a direct return from the west side to the new air shaft, and all old abandoned works can be cut off. A pair of new entries will be driven from the north entries on the west to another shaft sunk some time ago, but not used to much advantage on account of faults encountered. A new overcast is being constructed at the second south entry in order to strengthen the air at the head of this pair of entries where the current has been very weak. (Inspected by Thomas.)

Mine No. 28, located one mile north of Ardmore, inspected February 9th. I made a thorough inspection of this mine on the above-named date. The top structures, pulley wheels, ropes, cages, guides and all safety appliances. were in good condition. The ventilation all over the mine was good and the doors were in perfect order. The entries and air-courses were well timbered and clean, with the exception of the manway, which was sloppy, owing to water dripping from the roof. Men were compelled to walk through this slush in order to get to the stairway in the escape shaft. I directed attention to this bad condition, and the superintendent promised to remedy same at once. I noticed that the main west entry had encountered a fault which had not been worked through. At this point the covering was very thin, letting in a quantity of water, which was very troublesome. (Inspected by Thomas.)

Mine No. 25, located one-quarter mile south of Keota, inspected August 18, 1909. I inspected this mine on the above-named date and found mine in good condition. The roadways were high and dry and a full volume of air was circulating through every section of the mine, the mine being healthful throughout. A new slope entrance, used for an escape as well as a travel road to go to and from the coal level, adds greatly to the safe equipment of the mine. (Inspected by Richards.)

Mine No. 66, located one and three-fourths miles southeast of Keota, inspected August 16, 1909. On date of inspection I found this mine to be in only fair condition. The air was found to be short in volume in some parts, but this defect the company expects to overcome soon. Plans are now under way to erect a concrete wall separating the east part from the west, the former having been worked out and abandoned. This contemplated improvement will, I believe, be very beneficial in supplying good and sufficient air. My attention was directed to a condition prevailing which the miners feared was dangerous to the men employed in the mine. On account of high water on the surface at times fear was expressed that these waters would reach the mine below and cause loss of life. I made a careful examination of the basis of complaint and found that there was no danger of flooding the mine, only in case of extremely high floods upon the surface. At such times the miners working below should be notified and called from the mine until all danger is past. I notified Mr. Vail, the mine superintendent, in writing, of the defects and danger in case of high water and received the assurance that every precaution would be taken to protect the lives of the men in the mine. Among the improvements proposed was an air shaft to be sunk in the face of the north entries, which would supply a full volume of air and also provide an easy escapement for the men in case of accident caused by high water or otherwise. (Inspected by Richards.)

Mine No. 61, second inspection, August 31, 1909. This is the largest mine in the State, producing daily 1,100 tons of coal. I spent two days making an inspection of this mine, owing to the large acreage excavated. The volume of air in some places was not up to the requirements, but good headway is being made to cover this defect by sinking a new air shaft near the working face. The air-courses are being cleaned, removing all debris, which will also aid very materially in providing better ventilation. The company is experiencing some difficulty in controlling the water which, to no small extent, retards the work on the new improvements. Aside from the defect in ventilation, the mine was in good condition. The roadways were in good order, two electric motors being in use to haul the coal. All outside buildings, machinery, ropes and safety appliances, were in good condition. (Inspected by Richards.)

Mine No. 28, second inspection, October 15, 1909. On account of dull business this mine has been idle for several months and only recently were operations resumed. I found the mine in good condition, the ventilation being perfect. The entries were high and clean and the ropes, cages and safety catches were found to be in first-class condition. I also examined the scales and they were found to be correct. (Inspected by Richards.)

Carbon Mine, located three and a half miles east of Macon and operated by E. M. Brammer. I inspected this mine on September 3, 1909, and found same to be safe and in good healthy condition. Coal is reached by a slope and is brought to the surface by hand power. The product of the mine is consumed locally. (Inspected by Richards.)

John H. Dennis operates a mine one mile west of Macon. Inspection of the mine was made on September 11, 1909, and everything found in good order. The mine is ventilated by a furnace through a partition of the main shaft. The mine is worked on the long wall plan and the product is conveyed to the surface by horse power. The coal taken from the mine is sold in and around Macon. (Inspected by Richards.)

Teeter's Mine, operated by J. H. Davidson, near Ardmore. This mine has a drift opening and is provided with one escape shaft. Ventilation is by furnace, which was found to be good and sufficient. The mine is in fair condition. (Inspected by Richards.)

Mack Gibson recently opened a new mine two and a half miles southeast of Keota. I made an inspection of same on August 28, 1909, and found same to be in fairly good shape. The coal is reached by slope, and the product of the mine will be sold to local consumers. Mr. Gibson's postoffice address is College Mound, Missouri. (Inspected by Richards.)

Charles and David Badgerow are operating the old Gates mine, located one and a quarter miles southwest of Keota. This is a small country mine, in which three men are employed. Work is done on the room and pillar plan and the mine was in fairly good condition. Date of inspection, August 28, 1909. (Inspected by Richards.)

Elmer Hall operates a small mine three miles southwest of Macon. The shaft is 75 feet deep to the coal bed. The product of the mine is sold to local consumers. The mine was in good condition. (Inspected by Thomas.)

Home Coal Company, a corporation, is operating a mine near Macon. Three miners and two top men were employed on date of visit, September 17, 1909. The mine is a new one and not yet ready for business. Coal is reached by a shaft eighty feet deep, and will be worked on the long wall plan. Electric coal cutting machines will be installed and all machinery will be first class and up-to-date. The mine will have shipping facilities with the C. B. and Q. Railroad. A spur track is being laid to the mine. (Inspected by Richards.)

A. Hurd operates a mine three and a half miles southwest of Macon. I visited this mine on August 17, 1909, finding everything in satisfactory condition. On day of inspection six miners and two top men were employed. (Inspected by Richards.)

Isaacson and Underwood have a small mine two and a half miles southeast of Callao. The mine is only operated during the fall and winter months. The opening is by slope and hoisting is done by horse power. Ventilation is by furnace. Mine is in good, safe condition. Date of inspection, September 2, 1909. (Inspected by Richards.)

John H. Jones operates a mine near Bevier, employing eight miners. The mine has a shaft opening 103 feet deep and is worked on the room and pillar plan. I examined the underground workings and found same in good condition. Ventilation by means of a furnace, was giving good results. Date of inspection, November 1, 1909. (Inspected by Richards.)

James Brothers Mine, located on and a half miles north of Bevier, was inspected on August 20, 1909. David James, a practical miner, is foreman and manager, and everything in and about the mine is kept in first-class condition. (Inspected by Richards.)

Feister Mine, operated by T. P. Hunt, and located four miles southeast of Macon, was inspected on September 3, 1909, and found satisfactory in every way. (Inspected by Richards.)

Lunsford Mine, operated by Henry and A. G. Lunsford, is one of the numerous small mines worked in Macon field. The mine is in the hands of practical men, and every precaution is taken to insure safety to the men employed. (Inspected by Richards.)

Joseph Lenk is operating a small mine on the Joseph Brown place, one mile west of Macon. Mr. Lenk only recently leased the property, and I have every reason to believe he will put the mine in good condition. On day of inspection, September 24, 1909, I found same to be in the worst condition possible. Ventilation was poor, roads were wet and dirty, and unsanitary in the extreme. Mr. Lenk is personally looking after the improvements necessary, and is bending every effort to put the mine in good shape. (Inspected by Richards.)

Northwestern Coal and Mining Company, Bevier.—This company operates two mines southeast of the town of Bevier, and a spur switch gives shipping connection with the C., B. and Q. R. R. On date of inspection, January 18th, all top structures, as well as all ropes, cages, pulley wheels and safety appliances were in good condition. The air currents in Mine No. 9 were split to the north and south, and a sufficient volume was coming down the shaft. The split system of ventilation is carried on extensively in this mine. The overcasts in these mines are the largest in the State and are looked after with care. There are twelve divisions in the currents, fresh air being carried to the men in all parts of the mine. The trap doors in use are the very best, and the roads are kept clean, high, wide and straight. The law calls for all old abandoned rooms to be closed up, and this is strictly enforced. The sealed work is a compliment to the men who do the work, and the best I have seen. Three hundred men and boys were at work in the mine on day of inspection. (Inspected by Thomas.)

Mine No. 8.—I made an inspection of this mine on January 22d, and found the top structures, as well as the underground workings, in splendid condition. The mine is given every care and attention and, considering the great amount of excavated territory and the long distance the air has to travel to reach the working face, the ventilation is good. All of the old abandoned works have been blocked off with good stoppings. If this were not done the air in this mine would soon become impregnated with black damp. All of the doors were in good working order, the entries were well-timbered, clean and dry. Three hundred and twenty men and boys were at work in the mine on day of inspection. I made another inspection of this mine on April 3, 1909, and the same excellent conditions prevailed. (Inspected by Thomas.)

Mine No. 8, second inspection, August 19, 1909. This is one of the largest mines in the State, having a daily output of 1,000 tons. The mine has a perfect system of ventilation. Pure air circulates through every section of the mine. The roadways are kept clean, high and dry, and the mine in general is kept in the pink of condition. I also examined all top structures, ropes, cages, safety catches and machinery, and found all in good working order. (Inspected by Richards.)

Mine No. 9, second inspection, November 5, 1909. I visited this mine on the above-named date and made a thorough examination of the underground workings as well as of the ropes, cages, safety catches, scales, etc. If every mine were as well managed there would never be cause for complaint. This is one of the best ventilated mines in the State, and everything in and about the mine is par excellent. (Inspected by Richards.)

G. A. Seaney operates a small mine four and a half miles southeast of Macon. The coal is reached by slope and ventilation is supplied by natural means. I inspected the mine on September 25, 1909, and found same in good condition, except that some water was allowed to accumulate on the main road. (Inspected by Richards.)

Richard Walker, owner and operator of a small mine four and a half miles southeast of Macon, was not working the mine on day of visit, September 25, 1909. Ropes and cages were in good order. The interior of the mine was not inspected. (Report by Richards.)

J. E. Ruch and Son operate a small mine two miles east of Macon and keep same in fairly good condition. I inspected this mine on September 3, 1909. (Inspected by Richards.)

William Ring has a mine two miles southwest of Macon, which I inspected on September 10, 1909. Three miners were employed, who push the coal to the mouth of the slope. The plan of work is long wall and ventilation is by natural means. I have no fault to find with the management and condition of the mine. (Inspected by Richards.)

John Stewart recently opened a mine in the Macon coal field, two miles west of town. Entrance is by a shaft sixty feet deep and the coal was reached on the day I visited the mine, September 11, 1909. The mine, I understand, will only be operated during the winter months to supply local trade. The coal seam will average 22 inches in thickness. (Inspected by Richards.)

Bud Vestal Mine, located two miles west of Keota, is now operated by James Perry and Hopkins Gilstrap, both of Bevier. The product of the mine is sold to local consumers. I inspected the mine on August 28, 1909, and found same in good condition. (Inspected by Richards.)

John Smith owns and operates a small mine three miles southwest of Macon. The mine is worked on the room and pillar plan and is kept in good condition. (Inspected by Richards.)

MONITEAU COUNTY.

Monarch Coal and Mining Company, a corporation operating a coal mine seven miles north of Barnett. The coal is mined by stripping the surface and the face worked will average fifty feet, of which forty-five feet consist of canal coal and five feet bituminous. The product is hauled seven miles in wagons to the nearest railroad station and shipped. I made an inspection of this mine on September 15th and was well satisfied with the manner of working and general condition of the mine. (Inspected by Richards.)

MONROE COUNTY.

J. B. Gilbert owns, operates and manages a mine near Paris. I visited his mine on November 13, 1909, and found same kept in perfect condition in every respect. The mine has a slope opening with natural ventilation. The method of working the mine is long wall, and six miners are employed. (Inspected by Richards.)

MORGAN COUNTY.

Ouachita Coal and Clay Company, a corporation operating six miles west of Versailles. I inspected the mine of this company on September 15th and found same in bad condition. The ventilation in the mine was poor and instead of cages, as the law requires, iron tubs were used to hoist the men in and out of the mine. I instructed the superintendent to get cages with safety catch appliances at once. Coal is reached by a shaft 120 feet deep and is brought to the surface by steam power and consumed by the company's brick plant operated in connection with the coal mine. (Inspected by Richards.)

PLATTE COUNTY.

Home Riverside Coal Company, office at Leavenworth, Kansas.—Mine inspected December 15, 1909. The mine inspectors of Missouri, accompanied by Mr. Moonsy, assistant mine inspector for the state of Kansas, by appointment, visited this mine on June 30, 1909, and made a thorough examination of the underground workings. The mine is entered on the Kansas side by a shaft 740 feet deep, drifting under the Missouri river to the coal beds underlying Platte county. The coal seam averages 22 inches and is worked on the long wall plan. Ventilation in the mine is produced by three fans. The air reaches every section of the mine and is of pure quality and in sufficient quantity. On day of inspection 330 men were employed. No machines are used in this mine, the drilling being done by hand, and the haulage in the mine being done by mules. We examined the ropes, cages and safety catches and found same in good working order. As explosive gas is generated in the mine, daily inspection is maintained by the company. The best evidence of the perfect management of the mine and the safe and healthful condition in which the mine is maintained is the fact that not one accident, neither fatal nor nonfatal, occurred during the year 1909, and no complaint was made to this department of unsatisfactory conditions by the men employed in the mine. (Inspected by Richards and Gavin.)

A second inspection of this mine was made by Inspector Robert Richards on December 15, 1909, and the same satisfactory condition was found to exist.

PUTNAM COUNTY.

Humphrey Mine, located five miles west of Livonia, and operated by R. T. Humphrey. Mine was inspected September 29, 1909, and found in a very unsanitary condition. The mine is operated on the single entry system and under this system cannot be properly ventilated without the aid of an air shaft. I was surprised to find men willing to work under such conditions. I gave orders that the manner of operating the mine be changed from single to double entry plan and that an air shaft be sunk at once. (Inspected by Richards.)

John Hawkins operates a small mine one and a half miles northeast of Mendota. Coal is reached by a drift, and on date of inspection, October 19, 1909, found mine in very good condition. (Inspected by Richards.)

C. J. Jones operates a small mine on land owned by John Hawkins, located one and a half miles northeast of Mendota. Coal is reached by a drift, with natural means of ventilation for the mine. The mine is worked on the single entry plan, to which I objected, and instructed the management to change to double entry. Otherwise the mine was dry and in good condition. (Inspected by Richards.)

Mendota Coal Company, a corporation operating several mines one quarter mile south of the depot at Mendota. The company is capitalized for $200,000, owns and controls nearly two thousand acres of coal land, and has $160,000 invested in land and plant.

Mine No. 7, operated by this company, was inspected on June 9th. The opening to this mine is by slope, and the coal is worked on the long wall plan. Ventilation in the mine is by furnace. I examined every detail of the underground workings, as well as all top structures and safety appliances, and found same in fairly good condition. (Inspected by Richards.)

Second Inspection of Mine No. 7.—At the request of miners employed in this mine, complaint having been made that mine was in bad condition, I made an inspection of the mine October 19, 1909. I found ventilation poor, but on date of visit preparation was already under way to improve this condition. During the interval of the filing of the complaint and my visit to the mine, the company made a change in the position of mine foreman, engaging a man of long experience. A new air-course is already under way which, when completed, will doubtless remedy the defect in the ventilation of the mine. I also tested the mine scales on the day of examination of mine, and found same correct. (Inspected by Richards.)

Mine No. 9 of this same company was inspected June 8th. This is also a slope mine, but worked on the room and pillar plan. The ventilation in the mine was good, as were the conditions generally, except in two entries where the removing of pillars caused a squeeze. A. McCullon has just been placed in charge of the mine, and knowing Mr. McCullon's reputation as a careful and efficient foreman, I have no hesitancy in saying that this mine will be in first-class condition in a short while. (Inspected by Richards.)

Missouri Mining, Manufacturing and Mercantile Company, Unionville. The coal in this mine is reached by slope and is worked on the room and pillar plan. The ventilation, supplied by means of a furnace, was giving poor satisfaction on date of inspection, the reason being that the air-courses were choked by mine debris. The main road to the escapement shaft was also in bad shape, the roadway being almost closed with rock. I gave instructions to the mine foreman to have the air-courses and roadway to escapement shaft cleaned at once. Date of inspection, June 10, 1909. (Inspected by Richards.)

Second Inspection.—I was called to this mine upon the request of the miners' organization of Unionville, reporting to me that the air in the mine was poor and that the roadway to the escapement shaft was in a bad condition. I therefore made a second inspection of this mine on July 26, 1909. I found the airways choked and the manways to the escapement shaft so badly blocked as to make it almost impossible for the men to get out of the mine in case of accident. I measured the air at the intake and at the return and found a sufficient volume circulating for the number of men employed at the time, but notified the foreman that if more men were employed a greater volume of air would have to be supplied. The manway to the escapement shaft was not only blocked with mine debris but an exhaust pipe from the pump was emitting steam in the roadway, thus binding the way and making a clear passage to the escapement shaft impossible. The company's attention was directed to these defects, and I ordered that same be corrected without delay, and if not corrected within a reasonable time, the men would not be permitted to work in the mine. I received assurance from Mr. Pritchard, the mine foreman, that all defects would be corrected and that mine would be put in first-class condition. (Inspected by Richards.)

Rogers Coal Company, Mendota.—This mine is located one and a half miles northwest of Mendota. On date of inspection, October 20, 1909, forty miners, six drivers and four top men were employed. I made a thorough inspection of the underground workings and found mine in good condition, a sufficient quantity and good quality of air circulating throughout the mine. I also examined the scales and found same well balanced. On a former inspection, June 8, 1909, the mine was found in the same excellent condition. (Inspected by Richards.)

Stevens Mine, owned and operated by A. Stevens, four and a half miles west of Livonia, is a small slope mine worked on the room and pillar plan. I visited the mine on September 29, 1909, and was informed that the mine would be abandoned in a few months and that a new drift would be opened. (Inspected by Richards.)

RALLS COUNTY.

Clark Coal Company, operating one and a half miles northeast of Perry, have a shaft sixty feet deep. The coal is brought to the surface by horse power and delivered to the Hannibal and St. Joseph railroad, which railroad consumes the entire product of the mine. I inspected the mine on June 15, 1909, when thirteen miners were employed. The mine was in fair condition, and ventilation produced by a fan was good. (Inspected by Richards.)

Ralls County Coal Company, operating in the Perry coal field, employed fifteen miners, two drivers and one top man on day of inspection, June 15, 1909. The coal is reached by a shaft fifty feet deep and is worked on the long wall plan. Everything underground was found in excellent condition, and all ropes, cages and safety appliances were in good order. (Inspected by Richards.)

Tighe Coal Company, operating on the William Barr land, one and three-fourths miles north of Perry, employ seven miners. The shaft is sixty feet deep and ventilation in the mine is furnished by a fan with fair results. The mine was inspected June 15, 1909, and found in fair condition. (Inspected by Richards.)

RANDOLPH COUNTY.

C. W. Butler Mine, located two miles west of Jacksonville. Inspected November 2, 1909, and found in good condition. (Inspected by Richards.)

Oscar Brown operates a small slope mine near Moberly, inspected November 9, 1909. Underground conditions good. (Inspected by Richards.)

D. T. Bradley operates a mine near Huntsville. The mine opening is by shaft, 55 feet deep, and the coal is mined on the room and pillar plan. I inspected this mine on November 11th, and found same poorly ventilated. The roadways were in fairly good condition. I gave suggestions as to how to improve air in mine. (Inspected by Richards.)

John Bowder operates a small mine on 508 acres of land owned by J. K. Lee, located three and a half miles southwest of Cairo. The coal is reached by drifting into the hills. I was called to this mine because of a fire in the mine. I went to the mine as soon as possible, but before I arrived the miners succeeded in sealing it up and all danger was past. (Inspected by Thomas.)

Mine was again inspected on July 26, 1909, at the request of Mr. Lee, the landowner, who complained that the mine was operated contrary to law. I found the mine in bad condition generally. The air-courses were partly closed as was also the outlet to the air shaft. The trouble was due to a single entry system, and I instructed Mr. Bowder to convert his mine into the double entry plan; to drive his entries to a point of advantage, and to sink another air shaft, which he promised to do. (Inspected by Richards.)

Thomas and James Burge operate a small mine one and a half miles east of Huntsville, on land owned by Andrew Bagley, but the coal is owned by John May. I inspected the mine on August 12, 1909, and found same satisfactory in every respect. (Inspected by Richards.)

John M. Cronan mine, near Moberly.—I visited mine on November 9, 1909, and found same in good condition generally. Also tested scales and found same correct. (Inspected by Richards.)

Carson Coal Company mine, one and a quarter miles north of Yates. The owner of the land is Archie Slattman. I inspected mine August 6, 1909. The mine is equipped with steam hoist, steel rope and iron cages, supplied with safety catches. The underground workings were safe and sanitary. (Inspected by Richards.)

D. E. Clark and Son operate a small mine one-half mile north of Huntsville. The coal is reached by drift and worked on room and pillar plan. Ventilation is supplied by means of a furnace. Mine was in good order. (Inspected by Richards.)

Daniel Durham mine on the R. Bowman land, near Jacksonville. Mine opening by slope and coal worked on the room and pillar plan. Hand power for hoisting and haulage. Mine in fairly good condition. Date of inspection, November 2, 1909. (Inspected by Richards.)

D. C. Davidson operates a small slope near Moberly, the product of which is consumed locally. I inspected mine on November 10, 1909, and found everything in and about the mine in good order. (Inspected by Richards.)

J. G. Cox and Thomas S. Evans are operating the Diamond coal mine near Huntsville. I inspected same on August 12th and found the underground workings in good condition, except as to ventilation. The operators are sinking a new air shaft, and when completed will remove this defect. (Inspected by Richards.)

Jacob and Andrew Esry operate small drift mines near Moberly. I inspected these mines November 10, 1909, and found same in good condition. (Inspected by Richards.)

J. M. Eravi, who operates a slope mine near Moberly for local trade, was not working his mine on date of visit, November 10, 1909, and no inspection of underground workings could be made. (Report by Richards.)

P. J. Goett slope mine, on room and pillar plan near Moberly. Date of inspection, November 9, 1909, and everything found satisfactory. (Inspected by Richards.)

Henry Brothers operate a slope mine near Moberly, but on date of visit, November 9, 1909, mine was closed down and no inspection could be made. (Report by Richards.)

H. L. Hughes operates a drift near Moberly. I inspected same on November 10, 1909, and found same carefully managed and conditions generally good. (Inspected by Richards.)

W. E. Mitchell Coal Company, mine located near Huntsville. Date of inspection, November 11, 1909. Every precaution is taken for the safety of the men and the mine is in first-class condition. (Inspected by Richards.)

Morris and Sons, operators, near Moberly, had closed down at time of my visit, November 9, 1909, and no inspection could be made. (Inspected by Richards.)

George W. Morris is operating a mine a half mile north of Huntsville, on land owned by J. W. Taylor. I visited this mine August 11, 1909, and found ventilation poor. I gave instructions to correct this defect, and was assured that same would be promptly remedied. (Inspected by Richards.)

W. H. McKiernan mine, near Moberly, closed down on date of visit, November 9, 1909. (Report by Richards.)

Moberly Coal Company, operating the old Eagle mine one and a half miles northwest of Moberly, had ninety men at work in the mine on date of inspection, May 27, 1909. Coal is reached by a shaft 96 feet deep, with steam hoist equipment. The mine is ventilated by a furnace, and in some parts of the mine the air was bad. The roadways were low and dirty, and in several places broken timbers were found. I pointed out these defects with orders to correct same. I was informed that mine would be generally overhauled and that the management contemplates installing a rope haulage system. (Inspected by Richards.)

Second Inspection.—I made another inspection of this mine on August 13th, and found mine in little better condition than on my former visit. The volume of air was insufficient, the roadways were still dirty and the interior condition of the mine was generally poor. Further inspection of the top structures, cages, ropes and safety catches, showed that mine was in need of better management. The safety catches were out of order and everything looked neglected. I gave orders that unless mine was placed in good and safe condition without delay, I would close same. (Inspected by Richards.)

Northern Central Coal Company, Huntsville.—Mine No. 2, located one mile east of Huntsville, examined May 26, 1909. Found mine in good condition, except as to air in first and second east entries of the north side. The company is driving entries to cut off the old works, which is the cause of the trouble with ventilation. When new entries are driven and the old works are cut off the air will be greatly improved by reason of the shorter route for the air currents to travel. I also examined the cages and safety catches and found same in good order. I made a second inspection of mine No. 2 on August 10th, and found ventilation, complained of on first visit, good and sufficient. The mine was in very good condition except for a few canvas doors hung instead of wooden doors. (Inspected by Richards.)

Mine No. 11, operated by the same company, one mile north of Higbee, was inspected on May 21, 1909. I found this mine, on date of inspection, in the very best condition possible. The mine is equipped with the latest model of steam hoisting machinery; pit top, cages and safety catches are of the latest improved kind, and every safeguard to protect the lives of the miners is provided. The mine is worked on the room and pillar plan and the coal is mined by the use of electric coal cutting machines. I made a second inspection of mine No. 11 on August 5th, but did not find the mine in the satisfactory condition as found on previous visit in May. The air at the downcast was up to the requirements, but at the working places the volume was lost by the use of the canvas curtains. I instructed the foreman to replace the canvas curtains with wooden doors, and to stop several leaky cross cuts where the air was lost and prevented from reaching the working places. All top structures, hoisting machinery and safety appliances were found in good order, except one steel rope was badly worn and not safe. I instructed the foreman not to allow men to be hoisted out of the mine on this rope, and to secure new rope at once. Mr. Elston, the manager, promised to get a new rope and to place doors in the mine at once. On November 24, 1909, I was called to mine No. 11 upon the request of miners and on complaint of bad condition of the scales. I examined same and found same in good order. I also found that the same defective steel rope, condemned on date of last inspection, was still being used. This shows the negligent manner of some mine managers and the chances taken to save an outlay for improvements at the risk of life and limb. I again gave orders to replace old rope with new one at once. (Inspected by Richards.)

Joseph O'Toole operates a small slope near Moberly, but on date of visit, November 9, 1909, mine was not in operation. (Report by Richards.)

John Pilkington operates a slope mine near Moberly, employing four men. I examined the underground workings on November 10, 1909, and found same in very unhealthy condition, the ventilation being very bad. The mine will soon have connection with another mine, and when this connection is reached the ventilation will be good. (Inspected by Richards.)

Edward Roop, who operates a small drift near Moberly, keeps same in good shape, and I had no fault to find on date of inspection, November 10, 1909. (Inspected by Richards.)

George Rothwell mine near Moberly was inspected on November 9, 1909, and found in good condition. (Inspected by Richards.)

Woolf and Tait mine, near Moberly examined on November 9, 1909, was not in the best condition. The ventilation was poor and the underground workings bad and unhealthy. I gave the foreman suggestions how to improve the air in this mine. (Inspected by Richards.)

L. B. Williams mine, near Moberly, inspected November 9, 1909, was poorly ventilated and unhealthy. I left instructions how to correct these defects. (Inspected by Richards.)

Harry Ward mine, near Moberly, operated by shaft with horse hoist and hand haulage, was not in operation on day of visit, November 9, 1909, and no inspection of underground workings could be made. The ropes and cages were in good condition. (Inspected by Richards.)

Williams and Rupp, operating a mine at Kimberly, employing ten men, keep their mine in fairly good shape. The mine is ventilated by furnace, giving good results. (Inspected by Richards.)

RAY COUNTY.

Bisbey mine, operated by O. P. Hainer, four miles east of Knoxville, is owned by William Bisbey. The mine has a shaft opening 145 feet deep and is worked on the long wall plan. I inspected this mine August 13th and found ventilation and underground conditions generally very good. (Inspected by Gavin.)

Love Brothers are working the Blair mine, one quarter mile east of Richmond. I inspected this mine on September 16th, and found mine in very good condition. The mine is ventilated by a furnace, and ropes, cages and safety catches were in good order. (Inspected by Gavin.)

Crawford-Wilson Coal Company is operating a coal mine a quarter of a mile west of Richmond, equipped with steam hoist, cages and safety appliances all in good order. Condition of the mine on date of inspection, July 24th, generally satisfactory. (Inspected by Gavin.)

Central Coal and Coke Company is operating mine No. 50 at Fleming. The mine is entered by a shaft seventy feet deep. The coal seam, averaging 22 inches, is worked on the long wall plan. Mining and haulage is done by electricity. All machinery is modern, and the underground conditions are first-class. I inspected this mine on September 29th. (Inspected by Gavin.)

Hugh Blair mine, one quarter mile west of Knoxville, was inspected August 6th. The shaft opening is 190 feet deep and ventilation is produced by a four-foot fan with very good results. (Inspected by Gavin.)

Keys mine, operated by Paris J. Keys, one quarter mile east of Richmond, was inspected September 16th. Mine was in fair condition. I ordered a new rope and repairs on the shaft. (Inspected by Gavin.)

Richmond and Camden Coal Company of Richmond, incorporated for $200,000, is one of the big coal companies of this section. Seven different mines are operated by this company. Mines Nos. 1 and 2 are located west of Camden. Mines Nos. 4, 5, 12 and 14 are near Richmond, and mine No. 16, also known as Maple Hill mine, is located near Swanwick. I inspected mines Nos. 1 and 2 on August 14th, and mines Nos. 4 and 14 on July 8th. I visited mine No. 1 at the request of miners, who complained that the ventilation was poor. I made a careful examination and found a good current of air passing through the mine, but the mine was very smoky at the return. In my judgment, this was due to bad oil used in the lamps. Mine No, 2 was thoroughly inspected and found to be in good condition. Mine No. 4, in which sixty-five men were employed on the day I inspected same, was also in very good condition. Mine No. 14 was carefully examined and found in excellent condition. Mine was well ventilated and all safety appliances were in good order. (Inspected by Gavin.)

Maple Hill mine, operated by the Richmond and Camden Coal Company, five miles west of Richmond, near Swanwick, was inspected August 12th. Ventilation is supplied by a ten-foot fan, with excellent results, and the mine is in very good condition. (Inspected by Gavin.)

Denning, Thomas and Pike operate a mine, No. 10, owned by the Hubbel Coal Company, and located one and a half miles west of Richmond. On date of inspection, July 23d, fifteen miners were at work in the mine. The mine has steam hoist and mule haulage. The air in the mine was good, and all ropes, cages and safety appliances were in good order. (Inspected by Gavin.)

Pickering Coal Company, an incorporated company, owns and controls 577 acres of coal land, and is operating three mines, known as mines Nos. 4, 9 and 11.

Same Company, Mine No. 11, located one half mile west of Richmond, has a shaft opening; is equipped with steam hoist, wire ropes, cages and all necessary safety appliances. Ventilation is supplied by a fan at No. 9 mine. Condition of mine at time of inspection, July 23d, very good. (Inspected by Gavin.)

Same Company, Mine No. 9, connected with Mine No. 11, was also inspected on July 23d, and the same splendid conditions prevailed. (Inspected by Gavin.)

Martin, Osborn and Hubbel operate a number of mines in Ray county. I inspected mine No. 22, in the suburbs of Richmond, on July 19th. On that day fifty men were employed in this mine. Coal is mined by electric mining machinery. Ventilation in the mine is first-class, and the mine in general is in very good condition. (Inspected by Gavin.)

Mine No. 3, operated by this same company, was inspected on September 30th, when thirty men were working. I also found conditions generally good in this mine. (Inspected by Gavin.)

Mine No. 7, owned by the same company and located one mile west of Camden, was inspected on September 30th. On date of inspection ninety-four miners, four drivers, eight day men and four top men were at work. Mine was in good shape and all safety appliances were in first-class condition. (Inspected by Gavin.)

Mercantile Coal Company, operating on 200 acres of land near Richmond, owned by the company, employs fifty-five miners. I examined this mine on July 24th and found the underground conditions to be good. The machinery was in good repair and all safety appliances in perfect order.

Pence Mine, operated by William Pence and Company, near Richmond, was inspected on July 23d. The mine is ventilated by a furnace at the Ward and Crispin mine, and the ventilation is not as good as it should be. I was assured that a fan would be placed at the mine in a short time. The mine gives employment to thirty-five miners.

Pence and Calnen, operating on land owned by Russell, Jacobs and Odell, one mile south of Richmond, employ twenty-four miners and two drivers. I made an inspection of this mine on July 7th and found same in very good condition. (Inspected by Gavin.)

Ray County Coal Company, operating one mile north of Richmond, had seventy-two miners at work on November 30th. This mine has a shaft opening 58 feet deep, but no escape shaft has been provided. I notified the secretary of the company of this violation of the law, and was promised that this defect would be promptly rectified. (Inspected by Gavin.)

Thompson mine, operated by George W. Thompson, is located four and a half miles north of Richmond. Mine was inspected on November 30th and was in very good condition. (Inspected by Gavin.)

Ward and Crispin mine, north of Richmond, was inspected July 22d, and was in very good condition. (Inspected by Gavin.)

SCHUYLER COUNTY.

Hymes Mine, operated by John Hymes, is a small mine, located southwest of Coatesville. The mine has a slope entrance. The coal is worked on the room and pillar plan, with mule haulage. I inspected the mine September 9, 1909, and found same in first-class condition, except that some of the roadways were wet. (Inspected by Richards.)

Phoenix Mine, operated by Jesse Watson an land owned by J. Walker, and located four and a half miles southwest of Coatesville, is a slope worked on the room and pillar plan, with ventilation furnished by means of a furnace. I inspected mine on September 28, 1909, and found the same in good condition throughout. (Inspected by Richards.)

Jones Mine, operated by George Jones and located six miles southwest of Coatesville, is a slope worked on the room and pillar plan, with natural ventilation and mule haulage. I examined mine on September 28, 1909, and found same in fair condition. (Inspected by Richards.)

Snake Den Mine, operated by Mock and Grindle on the John Moore land, located four miles southwest of Coatesville. Like the other mines in this field, it has a slope entrance, and is worked on the room and pillar plan. Ventilation is furnished by means of a furnace of the make-shift vaariety, and the air in the mine was therefore not up to requirements. The roadways were in only fair condition. Date of inspection, September 28, 1909. (Inspected by Richards.)

SULLIVAN COUNTY.

Milan Coal Company.—This mine is located one quarter mile west of Milan, on the C., B. and K. C. Railroad. The coal is reached through a shaft opening 230 feet deep, and the coal seam measures 42 inches in thickness. I made an inspection of this mine on March 27th, and was pleased to find that the new air shaft ordered made had been sunk and was connected with the

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main shaft. For a period of over two years only five men were allowed to work in this mine because the mine had but one opening. I found the mine in splendid condition as to ventilation and sanitation. The company is developing the mine to the east. I noticed that one of the pulley wheels was damaged and ordered it replaced by a new one. Twelve men were at work in the mine on date of inspection. (Inspected by Thomas.)

Second Inspection June 11, 1909.—This is the only mine operated in Sullivan county. On date of inspection I found fourteen men employed in the mine and the company is bending every effort to make coal mining a success in this county. New improvements are constantly added and only recently a new air shaft was sunk and connected with the main shaft at a cost of $2,500. I examined the working places in the mine and also the machinery, cages, ropes and safety catches and found everything in good condition. (Inspected by Richards.)

Third Inspection, August 24th.—At the request of miners working in this mine I made an inspection of the mine said to be in bad condition. I found that the travel road to the escape shaft was not in as good condition as it could and should be, and requested the company to have same improved so that exit through the escape shaft would not be hindered in case of accident to the main shaft. Otherwise the mine was in good, safe condition. (Inspected by Richards.)

VERNON COUNTY.

Jones Coal Company mine, operated by J. Elmer Jones, near Panama, has a shaft opening 34 feet deep. The coal seam averages five feet and is worked on the room and pillar plan. On date of inspection, October 12th, I noticed that several rooms had caved in and on this account the ventilation was not very good in some parts of the mine. This mine was formerly owned by the Carbon Coal Company, which failed. Mr. Jones took charge of the mine and brought same on a paying basis. On day I visited the mine thirty-three miners and two drivers were working. (Inspected by Gavin.)

On October 14th I visited a number of small strip mines in the Panama field and found them operated in a manner which insures reasonable safety to the men employed therein. (Inspected by Gavin.)

ACCIDENTS.

COAL.

Table 14—Coal Mine Accidents—Fatal—1909.

Date of accident.	Name of injured.	Occupation.	Age	Married or single.	Orphans	Name of operator.	County.	Nature of accident.	Coroner's verdict.
Jan. 5	George Hopper	Shot firer	42	M	1	John Hurst Coal Co	Henry	Explosion of shot	
Jan. 22	Owen Richardson	Miner	33	S		Central C. & C. Co	Macon	Fall of rock	Accidental death.
Jan. 26	Chas. Cyliana	Miner	22	S		Central C. & C. Co	Macon	Fall of top coal	
Feb. 8	Emmet Polson	Miner	43	M	6	Central C. & C. Co	Macon	Fall of rock	Accidental death.
Feb. 9	Henry Hoover	Sprogger	49	M	5	Western C. & M. Co	Lafayette	Fall of coal	Accidental.
Feb. 19	Frank Montebilier	Miner	40	M	6	Central C. & C. Co	Vernon	Fall of rock	Unavoidable accident
March 1	Vincino Corni	Miner	27	S		Rombauer Coal Co	Adair	Fall of coal	
May 4	Walter N. Tumlin	Miner	35	M	2	Central C. & C. Co	Macon	Fall of coal	No inquest.
May 19	Porter Minor	Miner	18	S		D. A. Clarke	Randolph	Fall of rock	Due to negligence.
June 16	L. D. Wysong	Miner	54	M	7	A. F. Parks	Henry	Fall of coal	No inquest.
July 6	Thomas Conroy	Shot firer	60	M	3	Moberly Coal Co	Randolph	Explosion of shot	No inquest.
July 16	Alexander Nimmo	Miner	44	M	8	Great Northern Fuel Co.	Adair	Fall from tub	No inquest.
Aug. 2	Guiseppi Pesavento	Miner	25	S		Northwestern C. & M. C	Macon	Returned on shot	By own carelessness.
Sept. 3	Antonio Palifini	Miner	24	S		Northwestern C.&M. Co.	Macon	Fall of rock	Accidental death.
Sept. 4	Nicholas Ritter	Mine boss	40	M		Fulton Coal Co	Callaway	Struck by cage	Accidental death.
Sept. 20	Battista Pogliai	Miner	20	S		Northwestern C.&M. Co.	Macon	Fall of rock	Due to own negligence
Oct. 1	W. P. Thompson	Miner	42	M	5	Thompson Bros	Bates	Suffocation by powder smoke	
Nov. 30	Harry Huff	Miner	21	M		Audrain Coal Co	Audrain	Fall of rock	Due to own carelessn's
Dec. 9	Owen Lucas	Top man	22	M	1	Central C. & C. Co	Macon	Struck by cage	Accidental.
Dec. 19	Jas. Otis Adkison	Miner	19	S		Teeter's Mine	Macon	Fall of rock from roof	Unavoidab accident
Dec. 30	Robert Creason	Miner	41	M	3	James England	Henry	Fall of rock	Accidental.

Table 15—Coal Mine Accidents—Non-Fatal—1909.

Date of accident.	Name of injured.	Occupation.	Age.	Married or single.	Orphans.	Name of operator.	County.	Nature of accident.
Jan. 22	John McHenry	Miner	36	M	3	Central Coal & Coke Co	Macon	Fall of rock.
Feb. 16	Robert Hirshman	Miner	28	M	4	Central Coal & Coke Co	Macon	Explosion of shot.
Feb. 20	O. Lower	Miner	30	M	1	Marceline Coal Mining Co	Linn	Fall of roof.
Feb. 27	John C. Tolley	Miner	50	W	5	Marceline Coal Mining Co	Linn	Fall of slate.
Feb. 27	Wm. Lineback	Miner	64	M	3	Plattenberg Coal Co	Lafayette	Fall of slate.
Mar. 31	Homer McDaniel	Miner	19	S		Marceline Coal Mining Co	Linn	Fall of coal.
May 28	Patrick H. Gavin	Miner	45	S		Missouri City Coal Co	Clay	Fall of rock.
June 5	Thomas Dudley	Miner	44	M	8	Northwestern C. & M. Co	Macon	Fall of rock.
June 11	Hays Pinkard	Miner	35	S		Central Coal & Coke Co	Macon	Fall of rock.
July 6	J. M. Morris	Shot firer	61	M	9	Moberly Coal Co	Randolph	Explosion of shot.
July 7	John Dominick	Coal loader	54	M	5	Western C. & M. Co	Lafayette	Fall of cage.
July 7	John Plozza	Miner	45	M	8	Central Coal & Coke Co	Macon	Fall of rock.
July 16	Thomas Nimmo	Miner				Great Northern Fuel Co	Adair	Struck by man falling.
Aug. 9	Jesse Mason	Miner	65	M	1	Central Coal & Coke Co	Macon	Fall in sump.
Aug. 18	Owen Yocum	Miner	21	S		Northwestern C. & M. Co	Macon	Fall of rock.
Aug. 31	Thomas J. Jones	Driver	31	M	3	Central Coal & Coke Co	Macon	Fall of timber.
Sept. 1	J. F. Young	Driver	38	M		Central Coal & Coke Co	Macon	Fall of timber.
Sept. 3	James Palifini	Miner	19	S		Northwestern C. & M. Co	Macon	Fall of rock.
Sept. 15	John Waska	Miner	55	M	2	Diamond Coal Co	Lafayette	Fall of slate.
Sept. 21	Andrew Malone	Coal loader	46	S		Western C. & M. Co	Lafayette	Fall of slate.
Nov. 11	J. W. Blankenship	Miner	60	M	4	Central Coal & Coke Co	Macon	Fall of coal.
Dec. 2	Antonio Shertino	Miner	26	S		Rombauer Coal Co	Adair	Fall of rock.
Dec. 15	Mathew Lyons	Machine helper	20	S		Lanning-Harris C. & G. Co	Lafayette	Fall of slate.

REPORTS OF COAL MINE ACCIDENTS—1909.

FATAL.

JANUARY 5th—John Hurst Coal Company, Deepwater, Henry county; George Hopper, age 42; occupation, shot-firer. Hopper went to the room of a miner who had finished drilling and tamping his shot and informed him that he was not going to shoot his shot because he was late. This the miner believed to be a true statement from the shot-firer. When the miner had finished preparing his shot, he waited a short time to see if the shot-firer would return. Believing that the shot-firer had gone home, he lit his own shot and proceeded to the bottom. After the miner lit his shot and left the room the shot-firer returned, going into the room and within a few feet of the shot when the explosion occurred. Hopper received serious injuries, from which he died four and a half hours later. Another case of pure carelessness.

JANUARY 22d—Central Coal and Coke Company, Bevier, Macon county; Owen Richardson, age 33, was instantly killed in Mine No. 66 by fall of large rock, 7 by 25 by 18, which broke loose at the face, completely covering him. The same rock caught his partner, John McHenry, who received serious injuries, but was saved from instant death by having been close to his empty car, which he was preparing to load and upon which a part of the weight of the rock fell. Richardson and McHenry were engaged in drawing pillars in the seventh east entry on the north side of the shaft where they had driven a skip up some distance, parallel with the entry, about eight feet wide, for a roadway, and were in the act of breaking through a pillar and bringing it back when the rock fell. The place was very poorly propped or protected for work of this character. The mine inspector failed to find where there had been any props set for a distance of twenty feet, and no props were set along the edge of the old entry to which this ledge of rock extended. The weight pulling down on this edge without timber support caused it to come down all the way to the rib. There was nothing to give the men warning of the approaching danger. The wonder is that the men will take such chances of losing their lives for the sake of a few minutes' work in setting a few props. Pulling pillars is the most dangerous work the miner has to do, and this work should only be entrusted to the most practical and careful men. The mine foreman should select them with the greatest care and furnish them with all necessary material for their protection.

JANUARY 26th—Central Coal and Coke Company, Bevier, Macon county; Charles Cyliana, age 22; occupation, miner. Killed by fall of top coal. Deceased was at work in Mine No. 61, in room 19, in the second east of the seventh south. From the evidence obtainable it seems that he was trying to bring down a piece of top coal. Going under it to get a pick he had left at the face, it fell on him and crushed him to death. He was at work by himself, and some few minutes elapsed before anyone knew he was under the coal, and when he was taken out he was dying. It is surprising to believe that men can be so careless as to go under a rock or coal which they know is liable to fall any moment. It is only by good luck that a greater number are not killed each year in the same way. The piece of coal which fell on Cyliana measured four feet six inches long by three feet four inches wide and was one foot thick.

February 8th—Central Coal and Coke Company, Bevier, Macon county; Emmet Polsen, age 43; occupation, miner. Instantly killed by fall of rock in Mine No. 28. He was engaged in driving the second east entry of the second south, on the east side of the shaft. He knew that the rock, which was a bell, was loose, and he had taken the usual precaution by setting a good entry timber under it on the road side. Any practical miner would have considered this sufficient protection, and ordinarily would have protected him had the rock been one solid mass. But such was not the case. The rock had a perpendicular slip running through it which divided it into two pieces. This could not be detected on the surface of the roof, and, therefore, could not be guarded against. It was one of those unfortunate accidents against which cannot be guarded, and which will happen as long as coal is mined. The rock was only four feet from the working face, measured seven feet long, three feet wide and eighteen inches thick, weighing probably thirty hundred pounds.

February 9th—Western Coal and Mining Company, Lexington, Lafayette county; Henry Hoover, age 49; occupation, spragger; cause of death, fall of slate. Hoover was employed as spragger after mining machine, whose duty it was to sprag the coal for holding in position until loaders were ready for it to fall. A fall of coal, however, came down, knocking down the jack and let the roof slate down upon him, seriously injuring his back, from which he never recovered, and died a month later.

February 19th—Central Coal and Coke Company, Panama, Vernon county; Frank Montebelier, age 40; occupation, miner; fall of rock. Deceased was an Austrian by birth, and had worked in coal mines for seven or eight years. He was employed at the company's Mine No. 23, located near Panama, and at the time of his death was engaged with three other men in drawing pillars in the main south entry, about three hundred feet from shaft bottom. They were mining off a shot and had mined in about three and a half feet when they struck a slip in the roof, which loosened the rock, and which fell on him, causing instant death. The accident was unavoidable.

March 1st—Rombauer Coal Company, Mine No. 3, Novinger, Adair county; Vinceno Corni, a native of Italy, age 27; occupation, miner. Received injuries while at work at face, by fall of top coal, which, at first, were not considered serious, but which resulted fatally on March 19th.

May 4th—Central Coal and Coke Company, Mine No. 25, Bevier, Macon county; Walter N. Tumlin, age 35; occupation, miner. Death caused by fall of top coal and rock in room while loading car of coal. He had put in first shot in room neck, which loosened rock and top coal while working under same. The material falling on him caused contusion of back and left shoulder, fractured his left leg, lacerated his scalp, and he died from shock and injuries twenty-four hours after accident occurred.

MAY 19th—D. E. Clark mine, half mile north of Huntsville, Randolph county; Porter Minor, age 18; occupation, miner. Death caused by fall of rock, the result of insufficient timbering in his place of work.

JUNE 16th—A. F. Parks mine, two miles west of Calhoun, Henry county; L. D. Wysong, age 54; occupation, miner. Died from injuries received from falling rock while at work. Wysong was engaged in breaking loose some coal at the bottom of the face when a piece of coal about seven feet long and three feet wide fell on him. The accident was the result of carelessness on the part of deceased. The accident occurred on the 16th and the injured man died on the 18th.

JULY 6th—Moberly Coal Company, Eagle Mine, Moberly, Randolph county; Thomas E. Conroy, age 50; occupation, shot-firer. He had placed two shots in one of the rooms and before they went off he went into an adjoining room to prepare for another blast. He had just finished tamping the last shot when the first two exploded, blowing through the shallow partition, inflicting injuries from which he died five days later. The accident was the result of pure carelessness.

JULY 16th—Great Northern Fuel Company, Mine No. 21, Novinger, Adair county; Alexander Nimmo, age 44; occupation, miner. Death caused by fall from tub. Nimmo was at work in the bottom of a shaft, some 100 feet deep. A dynamite blast had been discharged about the noon hour, and Nimmo complained of the smoke and other impurities. He ascended out of the mine in a tub, and when about fifteen feet from the bottom he fell out of the tub down to the bottom of the shaft. There were working in the bottom of the shaft at this time Thomas Nimmo, Thomas Shewsberry and George Nimmo. As Alexander Nimmo was falling he partially struck Thomas Nimmo, thereby partly breaking his fall and seriously injuring Thomas Nimmo. The top man. Robert Nimmo, nephew of Alexander Nimmo, who witnessed the accident. says that the tub was rising steadily and not even twisting; that his uncle was subject to fainting spells, and that he must have fainted and let loose the rope, thereby falling out. He died from the injuries received twelve hours after the accident.

AUGUST 2d—Northwestern Coal and Mining Company, Mine No. 8, Bevier, Macon county. Guiseppe Pesavento, a native of Italy, age 25; occupation, miner. Death caused by an explosion, having returned on shot. Pesavento and his companion, W. E. Jones, were blasting rock and had prepared two blasts of dynamite. They waited a time, and hearing but one shot, Pesavento returned to see if he had lighted the fuse of the other. Just as he reached the place, the shot exploded and he received injuries from the effects of which he died two hours after the accident occurred.

SEPTEMBER 3d—Northwestern Coal and Mining Company, Bevier, Macon county; Antonio Palifini, a native of Italy, age 24; occupation, miner. Cause of death due to fall of several tons of rock which caught him while he was at work under same in mine. The testimony at the inquest revealed the fact that the deceased knew that the rock under which he was working was loose, and that he was told to make same secure and insure his own safety.

SEPTEMBER 4th—Fulton Coal Company, Fulton, Callaway county; Nicholas Ritter, age 40; occupation, mine boss. The deceased signalled to the top man to send down a wrench. The top man put wrench on cage and sent same to bottom of shaft. The cage, it is believed, struck Ritter on landing below, and when found by miners, fifteen minutes later, life was extinct. The coroner's jury returned a verdict of accidental death.

SEPTEMBER 20th—Northwestern Coal and Mining Company, Bevier, Macon county; Battista Pagliai, a native of Italy, age 20; occupation, miner; cause of death, fall of rock. Pagliai was mining off a shot when a large rock weighing several tons fell and struck him, causing instant death. The rock which struck him was a large bell rock. The blasts of coal had caused the rock to become loose, and he had not taken the precaution to make same safe.

OCTOBER 1st—Thompson Brothers Mine, near Worland, Bates county; W. P. Thompson, age 42. Deceased was a member of the firm Thompson Brothers, operating a mine now known as the Heatherly and Baker mine. On October 1st he was found dead in the mine, and it is supposed that he had been at work in the mine when he was overcome by damp, or perhaps suffocated with powder smoke. A report of the accident was not made to this department. The information given here was furnished the State Inspector by J. V. Tally, a relative of the deceased.

NOVEMBER 30th—Audrain Coal Company, Audrain county, Vandalia; Harry Huff, age 22; miner; cause of death, fall of coal. He was mining under a large piece of coal overlaid with rock. He was warned of the danger, but carelessly continued to work under same, when coal fell upon him, killing him almost instantly. There were four witnesses to the accident, and all agree that accident was due to his own carelessness.

DECEMBER 9th—Central Coal and Coke Company, Mine No. 61, Bevier, Macon county; Owen Lucas, age 22; occupation, top man; cause of death, struck by cage. Deceased was employed on top as a mine laborer. At the time of the accident he was loading timbers and sending same down shaft. While communicating with men down in the shaft with his head hanging over the main shaft, a descending cage struck him on the back of the head causing death instantly. A witness, at the coroner's inquest, said that he was working with Lucas on the night shift, and instead of handling the cars on the south cage, Lucas hallooed down the shaft and asked if we could handle the cars on the north cage. Witness said they could handle them on the north cage as well as on the south. Lucas must have had the impression that the north cage was on the bottom when he was talking to witness below, and was probably looking for cage to come up when it came down and struck him.

DECEMBER 19th—J. H. Davidson, operator of the Teeter's Mine, Ardmore, Macon county; James Otis Adkinson, age 19; occupation, miner. Killed while working in his working place by the fall of a large "bell" rock, which fell from the roof, striking him and crushing his body so badly that he soon afterward expired. The coroner's jury returned a verdict of unavoidable accident.

DECEMBER 30th—James England Mine, near Deepwater, Henry county; Robert Creason, age 41; occupation, miner. Death caused by being crushed under a rock weighing nearly a ton, which fell from the roof, caused by slips. No timbers had been placed under the rock, deceased probably not knowing that it was dangerous to work under same without supports.

NON-FATAL.

JANUARY 22d—Central Coal and Coke Company, Mine No. 66, Bevier, Macon county; John McHenry, age 36. occupation, miner. McHenry was engaged in drawing pillars, together with Owen Richardson, when a huge rock fell, catching both. Richardson was instantly killed (see fatal accidents) and McHenry was severely cut across the forehead, his scalp peeled back nearly to the center of his head, besides crushing his shoulder blades and otherwise being badly bruised.

FEBRUARY 16th—Central Coal and Coke Company, Mine No. 66, Bevier, Macon county; Robert Hirshman, age 28; occupation, miner. The night before his shot failed to go off. The morning he set up his machine, and while drilling the shot out, it went off, the powder burning his face, neck and one hand and filling his eyes with dirt and coal.

FEBRUARY 20th—Marceline Coal Mining Company, Marceline, Linn county; O. Lower, age 30; occupation, miner. A fall had occurred in his working place, and he was engaged in clearing same when in some unknown way he was struck on the side of the face, inflicting an awful cut but not a fatal wound.

FEBRUARY 27th—Marceline Coal Mining Company, Marceline, Linn county; John C. Tolley, age 50; occupation, miner. While at work in his working place a large piece of slate fell upon his right hand, injuring same to the extent of necessitating amputation of two fingers.

FEBRUARY 27th—Plattenburg Coal Company, Lexington, Lafayette county. William Lineback, age 64; occupation, miner. Leg broken by fall of coal.

MARCH 31st—Marceline Coal Mining Company, Marceline, Linn county; Homer McDaniel, age 19; occupation, miner. He was breaking up a fall of coal preparatory to loading same; failing to place props, it came down, falling upon him and breaking his right leg just below the knee.

MAY 28th—Missouri City Coal Company, Missouri City, Clay county; Patrick H. Gavin, age 45; occupation, miner. Gavin was mining coal when what is known as a pot rock fell on his leg breaking it below the knee.

JUNE 5th—Northwestern Coal and Mining Company, Mine No. 8, Bevier, Macon county; Thomas Dudley, age 44; occupation, miner. He was removing some coal from a blast of coal when a rock fell from the roof, striking him on the body and causing severe bruises.

JUNE 11th—Central Coal and Coke Company, Mine No. 61, Bevier, Macon county; Hays Pinkard, age 35; occupation, miner. A rock broke loose about three or four feet from face on left rib, striking him on the left leg and fracturing same.

JULY 6th—Moberly Coal Company, Eagle Mine, Moberly, Randolph county; J. M. Morris, age 61; occupation, shot-firer. Injuries received by explosion of shot at same time when Thomas E. Conroy was killed. (See fatal accidents.)

JULY 7th—Western Coal and Mining Company, South Mine, Lexington, Lafayette county; John Dominick, age 54; occupation, coal loader. Severe injuries received from fall of cage. Engineer dropped cage loaded with men.

One of the foot brakes fouled, but the other was in good order; also, the steam—three means of arresting the fall, but evidently only one was used. On the cage with Dominick were five other men, who received slight injuries and two who escaped uninjured.

July 7th—Central Coal and Coke Company, Mine No. 25, Bevier, Macon county; John Plazza, age 45; occupation, miner. A large rock fell on him, breaking his collar bone and bruising his left shoulder and hip while he was engaged in pulling entry pillars.

July 16th—Great Northern Fuel Company, Mine No. 21, Novinger, Adair county. Thomas Nimmo, a miner, was seriously hurt by being struck by a man falling from tub to bottom of shaft. Nimmo was at work in the bottom at the time. (See fatal accident of Alexander Nimmo.)

August 9th—Central Coal and Coke Company, Mine No. 61, Bevier, Macon county; Jesse Mason, age 65; occupation, miner. Sustained a fracture of the knee by a fall at the bottom of the shaft.

August 18th—Northwestern Coal and Mining Company, Mine No. 8, Bevier, Macon county; Omer Yocum, age 21; occupation, miner. Large gash on head and bad cut on nose received from fall of rock while preparing to put up a set of timbers in the entry.

August 31st—Central Coal and Coke Company, Mine No. 61, Bevier, Macon county; Thomas J. Jones, age 31; occupation, miner. He was riding out on the motor car with a trip of coal when a piece of the timber fell from the roof and struck him, knocking him off the car. He sustained severe bruises and badly injured his knee.

September 1st—Central Coal and Coke Company, Mine No. 61, Bevier, Macon county; J. F. Young, age 38; occupation, driver. He was driving with two empty cars, riding on the second car when his head struck timber, throwing him on his head and shoulder between the two cars, injuring his back and jaw.

September 3d—Northwestern Coal and Mining Company, Bevier, Macon county; James Palifini, aged 19; occupation, miner. While working with his brother in the mine drawing pillars, a rock weighing several tons fell, catching his arm on the corner of a coal car, so badly crushing same that amputation was necessary.

September 15th—Diamond Coal Company, Wilson Mine, Corder, Lafayette county; John Waska, aged 55; occupation, miner. Sustained fracture of collar bone and hurt his shoulder while mining a fall of coal. He was working under some loose slate which fell on him.

September 21st—Western Coal and Mining Company, Midway Mine, Lexington, Lafayette county; Andrew Malone, aged 46; occupation, coal loader. Had leg broken by fall of coal and slate. He was taking out some sulphur from under the coal when the coal and block slate fell on him.

November 11th—Central Coal and Coke Company, Mine No. 61, Bevier, Macon county; J. W. Blankenship, aged 60; occupation, miner. Injured by fall of rock. He was wedging down top coal at the face of his work when a small rock fell, striking him on the back.

December 2d—Rombauer Coal Company, Mine No. 4, Novinger, Adair county; Antonio Shertino, age 26; occupation, miner. Injury received by fall of rock. He was wedging down some rock when a boulder fell on him breaking his right leg in two places.

December 15th—Lanning-Harris Coal and Grain Company, Wellington, Lafayette county; Mathew Lyons, aged 20; occupation, machine helper. Left leg fractured below the knee. Lyons sat down behind the machine to rest with both legs across the track when slate fell from roof upon him.

Table 16—Showing No. of Fatalities in the Coal Mines of Missouri for a Period of Twenty Years.

	Gas and dust explosions.		Powder explosions and windy shots.		Falls of roof or coal.		Other causes.		Total.	
	K.	I.	K.	I.	K.	I.	K.	I.	K.	I.
1890	1	2	4	3	6	14	......	8	11	27
1891	......	......	......	2	10	23	8	7	18	32
1892	......	......	3	8	13	27	5	5	21	40
1893	3	1	......	1	12	13	6	11	21	26
1894	5	7	......	3	11	12	3	5	19	27
1895	......	......	1	3	8	6	4	6	13	15
1896	......	......	4	......	12	10	3	7	19	17
1897	......	3	......	......	6	16	2	4	8	23
1898	......	3	......	......	6	18	3	6	9	27
1899	......	......	2	......	9	16	3	7	14	23
1900	......	......	......	......	9	19	1	4	10	23
1901	......	......	3	7	9	6	3	3	15	16
1902	......	......	1	......	6	16	3	2	10	18
1903	3	1	......	2	10	12	4	7	17	22
1904	......	......	2	1	8	11	1	4	11	16
1905	......	......	1	1	8	23	2	12	11	36
1906	......	......	......	2	13	18	3	7	16	27
1907	......	......	1	1	6	19	1	3	8	23
1908	......	......	......	......	9	24	1	13	10	37
1909	......	......	3	2	14	17	4	4	21	23

("K" indicates killed, "I" injured.)

MISCELLANEOUS.

COAL.

Table 17—Showing Improvements Made by Operators During 1909.

Counties.	Coal Company.	Improvements.
Adair	Arctic Coal Co	Put in pump and scale, also drove entries and opened rooms.
Adair	Big Creek Coal Co	Sunk new shaft.
Adair	Consolidated Stahl C. Co	Installed 2 new boilers 100 H. P. each, 1 electric mine locomotive, one electric mining machine, built new power house.
Adair	Great Northern Fuel Co	New engine, new air shaft.
Adair	Kansas City Midland C. & M. Co.	Opened new mine.
Adair	Manufacturers C. & C. Co	Ordinary repairs and replacements.
Adair	Rombauer Coal Co	Opened new mine.
Adair	Star Coal Co	New tipple, barn, hoist, office and air shaft.
Audrain	Audrain Coal Co	Ten new pit cars.
Audrain	Martinsburg C. & M. Co	Opened up air course.
Audrain	Standard C. & M. Co	Erected new gin.
Barton	Pittsburg-Midway C. Co	Deep well of artesian water.
Barton	Western C. & M. Co. No. 17	Completed equipment of mine and underground development.
Bates	Dunkerly Coal Co	New air shaft.
Bates	Holland Coal Co	18 new pit cars, 2 new cages
Caldwell	Caldwell Coal Co	2 cages, 2 ropes, 1 smoke stack, retimbered main entries.
Carroll	Cowan, R. M	Opened new drift.
Carroll	Kenyon, J. A	New engine for pumping.
Cass	Creighton Tile & Coal Co	Installation of self oiler pit and tram cars, new cage and guides, new steel and track, flues in boiler, steam lines to jets and pump, new air course completed, retimbered main entry.
Chariton	Rothville Coal Co	Opened new mine.
Dade	Hickman, O	Opened new shaft.
Dade	Windes, W. H	Opened new mine.
Grundy	Trenton Mining Co	2 storage chutes, screens for grading coal.
Henry	Dickey, W. S	Escape shaft sunk.
Henry	Hurst Coal Co	Escape shaft sunk.
Johnson	Sutherland Coal Co	New tipple.
Lafayette	Bonanza Coal Co	3½ ton new steel.
Lafayette	Canterbury & Griffith	Gasoline engine, fan, fan house, recurbing the slope.
Lafayette	Diamond Coal Co	Recurbed main shaft of "Wilson" mine, made 1,000 feet of new mule road.
Lafayette	Labor Exchange 305	New boiler, engine and generator.
Lafayette	Stoll Brothers	New shanty.
Lafayette	Van Guilder, E. M	New office and shop buildings.
Lafayette	Waverly Brick & Coal Co	Opened new mine.
Linn	Marceline C. & M. Co	Improvements to pit top mine No. 1 amounting to $300.
Linn	Sheehan, J. E	New gin frame.
Livingston	Fulwood, Wm	New shaft, ten new mine cars and steel rails.
Macon	Badgerow, David	New gin frame.
Macon	Central Coal & Coke Co. No. 61	Haulage system.
Macon	Hurd & Hurd	New coal shed.
Macon	Jones, John H	Escapement shaft.
Putnam	Baugher, A. W	New timbers, new steel rails.
Putnam	Mo. Mng., Mfg. & Merc. Co	Escape shaft retimbered.
Putnam	Seavey & Triplett	200 feet of entry and 200 feet air course, 100 feet entry brushed.
Putnam	Shelton, W. E	New tipple, gin and cribbing.

TABLE 17—SHOWING IMPROVEMENTS MADE BY OPERATORS DURING 1909—Continued.

Counties.	Coal Company.	Improvements.
Putnam	Stevens, Americus	Opened new mine.
Randolph	Bradley, D. T	New mine opened and equipped with horse power.
Randolph	Northern Central Coal Co	One new hoisting cable, one boiler.
Ray	Doran, John	New escapement shaft.
Ray	Marten, Hubbell, Osborne	Installed fan at No. 10.
Ray	McCorkendale	New air course.
Ray	Pickering Coal Co	Moved mine No. 4 to new location.
Ray	Ray County C., B. & T. Co	New escapement shaft.
Ray	Vibbard Coal Co	New boiler.
St. Clair	Collins, J. C	One new slope.
Sullivan	Milan Coal Co	Connection from air shaft to workings, bottom retimbered.
Vernon	Brown, A. S	Opened new mine.

Table 18—Showing Officers of Incorporated Coal Companies.

ADAIR COUNTY.

Name of company.	President.	Secretary.	Superintendent.	Foreman.
Big Creek Coal Co	W. A. Harle			W. B. Harle.
Consolidated Stahl Coal Co	L. F. Bennight	O. T. Solberg	H. J. Whetsel	J. C. McLean.
Great Northern Fuel Co	J. S. Keefe	John Freebrough	I. B. Grant	
Kansas City-Midland C. & M. Co	Bernard Corregan	Edward Corregan	J. J. Ward	A. Steen.
Manufacturers' C. & C. Co	A. E. Harper	J. H. Lacey	G. W. Evans	Henry Dixon.
Rombauer Coal Co	R. G. Rombauer	M. T. Rombauer	Martin Rabbitt	J. Payton, C. M. Schott.
Star Coal Co	Chas. V. Miller	C. J. Baxter	C. J. Baxter	P. W. Riley.

AUDRAIN COUNTY.

Name of company.	President.	Secretary.	Superintendent.	Foreman.
Audrain Coal Co	J. C. Parrish	Wm. Ralston	George Burge	
Farber Coal Co	E. M. Lowder	K. Peterson	George Pierce	Chas. Tucker.
Martinsburg C. & M. Co	Lee Clark	Chas. Moser		Frank Moser.
Standard Coal Mining Co	Hardin McPike	C. L. Thompson	Thos. Morgan	

TABLE 18—SHOWING OFFICERS OF INCORPORATED COAL COMPANIES—Continued.

Name of company.	President.	Secretary.	Superintendent.	Foreman.
BARTON COUNTY.				
Pittsburg Coal Co	R. K. Brown	S. S. Caldwell	H. I. Karns	F. A. Cambers.
Pittsburg & Midway Coal Co	A. K. Lanyon	A. H. Lanyon	J. N. Hodges	Wm. Morgan.
Wear Coal Co	Chas. Campbell	D. B. Holmes	J. W. Goodner	J. C. Davis.
Western C. & M. Co	Edwin Gould	P. L. DuBois	J. W. Goodner	Wm. Keegan and H. Rogers.
BATES COUNTY.				
Atlas Coal M. & M. Co	J. B. Watson	J. A. Brown	J. B. Watson	S. R. Campbell.
Carr Coal M. & M. Co	Robert Carr, Sr	Roderick Carr	Robert Carr	Roderick Carr.
Dunkerly Coal Co	Jas. Dunkerly	H. L. Dunkerly	Jas. Dunkerly	
Fleming Coal Co	T. L. Fleming	W. W. Jamison	T. L. Fleming	S. J. Fleming.
Holland Coal Co	J. G. Holland	A. S. Holland	O. T. Holland	Fred Putnam.
BOONE COUNTY.				
Davis & Watson	J. P. Davis	W. J. Watson	J. P. Davis	J. J. Hubbard.
CALDWELL COUNTY.				
Caldwell Coal Co	W. F. Longley	C. H. Castley	W. F. Burnell	Joe Dollman.
CASS COUNTY.				
Creighton Tile & Coal Co	J. H. Beckham	Victor Swanson	Victor Swanson	Ed. Mallory.
CALLAWAY COUNTY.				
Fulton Fire Brick Co	Martin Yates	C. M. Pettibine	J. E. Henegar	L. Lee.
Fulton Coal Co	H. E. Davis	J. W. Trigg	H. E. Davis	Geo. Holmes.

TABLE 18—SHOWING OFFICERS OF INCORPORATED COAL COMPANIES—Continued.

CHARITON COUNTY.

Name of company.	President.	Secretary.	Superintendent.	Foreman.
Rothville Coal Co.	John L. Pendell	Henry Serfass	J. O. Davis	
CLAY COUNTY.				
Missouri City Coal Co.	Geo. C. Gray	Chas. G. Shaw	Chas. G. Shaw	Geo. Colville.
GRUNDY COUNTY.				
Trenton Mining Co.	C. A. Hoffman	R. W. Allerdice	R. W. Allerdice	Alex. Young.
HENRY COUNTY.				
Anaconda Coal Co.	H. T. Demaree	L. Cardis	F. Cardis	
Bowen Coal Co.	Richard Bowen	John Bowen	Thos. R. Bowen	C. W. Marshall.
Brush Coal Co.	N. Treusdorf	S. Treusdorf	S. Treusdorf	Wm. Reese.
John Hurst Coal Co.	J. W. Hurst	Tom Hurst	J. W. Hurst	Jas. Carver.
Standard Coal Co.	R. H. McFall	C. B. Green	C. S. Bennett	R. H. McFall.
JOHNSON COUNTY.				
Sutherland Coal Co.	T. L. Cooper	J. B. Scott	J. B. Scott	Geo. D. Champ.
LAFAYETTE COUNTY.				
Edward Aull Coal Co.	Edward Aull	M. W. Serat	Edward Aull	Chas. White.
Corder Coal Co.	R. L. Bishop	J. L. Burke		Jno. C. Greer.
Diamond Coal Co.	G. A. Fredking	H. F. Kleinschmidt	C. L. Wilson	Kramer & Hughes.
Dover Coal Co.	F. Davis	H. McLaughlin	T. Davis	John Hunman.
Farmers' Coal Co.	C. A. Snider	W. C. Duvall	G. B. Beatty	G. R. Beatty.
Independence Coal Co.	Roderick May	J. C. May	J. A. Goodrich	Alvin R. May.
Labor Exchange No. 305	Pat. McNally	E. C. Mignerey	A. J. Blair	Fred Klos.
Lanning-Harris C. & G. Co.	Chas. Nusbaum	L. D. Lanning	G. W. Stealy	R. M. Taylor.
McGrew Coal Co.	J. C. McGrew	J. C. McGrew	E. J. McGrew	Thos. Wedge.
Plattenberg Coal Co.	J. Plattenberg	F. L. Wallace	Geo. M. Vaughn	Mat. Atwood.
Western C. & M. Co.	Edwin Gould	P. L. DuBois	B. T. Wiley	

TABLE 18—SHOWING OFFICERS OF INCORPORATED COAL COMPANIES—Continued.

Name of company.	President.	Secretary.	Superintendent.	Foreman.
LINN COUNTY.				
Bucklin Coal Co	F. C. Shoemaker	Geo. Bell		Henry Burris.
Marceline C. & M'g Co	L. C. Jackson	C. P. A. Clough	J. Hemmings	Kelley & Elwain.
MACON COUNTY.				
Central Coal & Coke Co	Chas. S. Keith	E. E. Riley	Arthur Vail	
H. A. Lehman et al	J. D. Curry	Geo. H. Smith		H. A. Lehman.
Northwestern C. & M. Co	J. H. Bovard	C. G. Thurston	Louis Larson	Edw. Simpson.
MONITEAU COUNTY.				
Monarch C. & M. Co	B. W. Parker	B. W. Rennells	M. H. Spillard	
MORGAN COUNTY.				
Ouachita Coal & Clay Co	Geo. E. Neuhardt	S. W. Tate	W. E. Bradford	J. P. Jobe.
PLATTE COUNTY.				
Home Riverside Coal Co	E. W. Snyder	Geo. W. York	A. P. King	J. Chalmers et al.
PUTNAM COUNTY.				
Mendota Coal Co	F. H. Ketcham	H. B. Scott	W. D. Ketcham	F. M. Bramhall.
Mo. Mg., Mfg. & Merc. Co	C. W. Lane	L. B. Kirkpatrick	Wm. Tippett	
Rogers Coal Co	John Rogers	B. H. Johnston	John Rodgers	Jesse Rogers.
RALLS COUNTY.				
Clark Coal Co	W. B. Fitzpatrick	J. W. Fitzpatrick	D. B. Fitzpatrick	W. M. Drake.
Ralls County Coal Co	J. T. Seaton	J. T. Seaton		Thos. Waterston.

TABLE 18—SHOWING OFFICERS OF INCORPORATED COAL COMPANIES—Continued.

Name of company.	President.	Secretary.	Superintendent.	Foreman.
RANDOLPH COUNTY.				
W. E. Mitchell C. & M. Co	W. E. Mitchell	J. W. Werutz		W. E. Mitchell.
Northern Central Coal Co	J. H. Seaman	F. E. Nowle	Geo. A. Elston	Robert Morton.
RAY COUNTY.				
Calnen & Blair Coal Co	A. Blair	L. D. Greene	Joe Blair	Frank Byers.
Central Coal & Coke Co	Chas. S. Keith	E. E. Riley	Arthur Vail	James Wyatt.
Crawford-Wilson Coal Co	M. A. Crawford	D. V. Wilson	Wm. Wilson	Dan Spurbeck.
Fowler Coal & M'g. Co	A. M. Fowler	Andrew Wilson	Thos. B. Fowler	Ed. Hotchkiss.
Maple Hill Coal Co	Geo. A. Hughes	J. H. Hughes		C. J. Nickless.
Martin-Hubbell-Osborne	D. E. Martin	C. G. Hubbell	C. H. Hubbell	Henry Brown.
Mercantile C. & M'g. Co	J. W. Atwill	C. C. Hyatt	F. R. Atwill	Robert Blair.
Pickering Coal Co	I. Pickering	Geo. Pickering	Harvey Pickering	Richard Adams.
Richmond & Camden C. Co	Geo. A. Hughes	W. A. P. McDonald	John Gibson	
Ray County C. B. & T. Co		C. M. Daugherty	J. H. Bryan	
Vibbard Coal Co	M. R. Schooler	W. J. Bates	M. R. Schooler	J. E. Rogers.
VERNON COUNTY.				
Jones Coal Company	J. Elmer Jones	T. L. Fleming	J. Elmer Jones	F. E. Samples.
SULLIVAN COUNTY.				
Milan Coal Co	J. A. Young	DeWitt Green	DeWitt Greene	Jno. Rilholand.

Table 19—Coal Summary for 1909.

Number of counties producing coal	35
Number of shipping mines	118
Number of mines in local trade only	197
Total number of mines in operation	315
Number of miners employed	6,468
Number of other employes underground	1,827
Number of other employes above ground	802
Total number of employes	9,097
Number of animals used in and about mines	595
Number of kegs of powder consumed	116,172
Total tonnage of coal produced	3,850,748
Tons shipped in railroad cars	3,265,304
Tons sold to local trade	370,956
Tons consumed by miners	137,236
Tons consumed for steam and heating at mines	77,342
Tons mined by hand	3,009,146
Tons mined by machine	941,692
Number of new mines opened	35
Number of old mines abandoned	36
Number of fatal accidents	21
Number of non-fatal accidents	23
Total number of accidents	44
Number of employes to each fatal accident	433
Number of employes to each non-fatal accident	395
Tons of coal produced to each fatal accident	183,373
Tons of coal produced to each non-fatal accident	167,427
Tons of coal produced to each miner employed	595
Tons of coal produced to each employe, all classes	423
Ratio of fatal accidents per 1,000 employes	2.3

Table 20—Showing Tonnage of State for 1909 Compared With the Year 1908.

Counties.	1908.	1909.	Gain.	Loss.
Adair	568,446	564,328		4,118
Audrain	31,391	33,336	1,945	
Barton	103,765	217,001	113,236	
Bates	136,531	117,674		18,857
Boone	26,842	19,726		7,116
Caldwell	10,800	7,815		2,985
Callaway	50,719	32,491		18,228
Carroll	1,581	1,210		371
Cass	5,340	7,500	2,160	
Cedar	165			165
Chariton	879	1,007	128	
Clay	37,786	44,500	6,714	
Cole	500	2,466	1,966	
Dade	4,654	5,592	938	
Grundy	10,822	9,869		953
Henry	216,152	279,754	63,602	
Howard	7,438	611		6,827
Johnson	7,888	6,556		2,332
Lafayette	571,908	724,110	152,202	
Lewis	123			123
Linn	104,240	132,810	28,570	
Livingston	1,010	735		275
Macon	851,130	816,306		34,824
Moniteau	3,100	1,792		1,308
Monroe	800	450		350
Montgomery	1,382	2,828	1,446	
Morgan	1,683	1,680		3
Platte	190,306	204,098	13,792	
Putnam	54,505	51,770		2,735
Ralls	14,415	15,237	822	
Randolph	31,266	205,909	174,643	
Ray	294,230	301,383	7,153	
Saline	150	100		50
St. Clair	812	1,360	548	
Schuyler	2,425	2,390		35
Sullivan	3,263	4,972	1,709	
Vernon	52,197	31,472		20,725
Totals	3,400,644	3,850,748	571,574	121,380

NOTE:	Total tonnage for 1908	3,400,644
	Total tonnage for 1909	3,850,748
	Showing a net gain of 450,104 tons.	

STATISTICAL.

LEAD AND ZINC.

WESTERN DISTRICT.

Table 21—Showing Name of Land Owner, First Lessee, Operating Company, Capitalization, Amount Invested, Where Incorporated, Number of Acres or Lots Controlled, Location of Land, Number and Depth of Shafts, Number of Outlets.

LAWRENCE COUNTY.

Name of landowner.	Name of first lessee.	Name of operating company.	Capitalization.	Amount invested in land and plant.	Incorporated under laws of	Land controlled.	Location of land.			No. of shafts.	Average depth of shaft.	Outlets.
							Sections.	Township.	Range.			
Boston-Aurora Z. Co	Stone & Qualls	Stone & Qualls					9	26	25			
Boston-Aurora Z. Co	E. M. Apple & Co	E. M. Apple & Co								2	10	1
Buddicke, Wm	Stone & Ripper	Stone & Ripper										
Cleveland-Aurora M. L. Co		Various operators	$500,000		Illinois	109 acres	6 7 8	26	25			
Decatur L. & Z. Co	E. K. Johnston & Co	E. K. Johnston & Co		$2,500		8 lots	7	26	20	2	134	
Federal Z. & L. Co		Federal Z. & L. Co	100,000		Maine	20 acres	7	26	25	4	100	
Gundling, Harry		Silver Star M. Co	150,000	110,000		132 acres	26 35	28	28	4	170	3
Jones, E. C	Missouri Hydraulic M.Co	Gordon-Emmons & Co.				5 acres	7	26	25	1	90	1
Jones, E. C	Missouri Hydraulic M.Co	Aurora Mining Co					7	26	25	1	90	2
Kentucky M. Co	W. A. McCullough	W. A McCullough					8	26	25	2	70	
Kentucky M. Co	Sphalerite M. Co	Sphalerite M. Co	6,000		Missouri		8	26	25	3	100	
Midland M. Co		Wallace & Salts										
Newman & Co	J. W. Reynolds	Hunter & Co				1 lot	7	25	26	2	100	2
Newman & Co	Hudson & Co	Hudson & Co								4	80	2
Newman & Co	Reynolds & Sparks	Reynolds & Sparks								2	120	
Pruitt, B. W	Mt. Vernon M. Co	Keystone M. Co		25,000		10 acres	35	28	28	1	205	2
Pruitt, B. W	Mt. Vernon M. Co	Mystic Valley Co			Maine	10 acres	35	28	28	1	208	1
Robberson, Mrs. E. J	Coleman Bros	Coleman Bros		5,000		390 acres	7 8 17 18	26	25	2	260	2
Robertson, W. W		Julia West M. Co					26	28	28	2	180	
Rauch & Fischer	W. H. Scott M. Co	W. H. Scott M. Co				20 acres	8	26	25	1	260	3
Sphalerite M. Co		Sphalerite M. Co	6,000		Missouri	6 acres	8	26	25			
Stewart, P. W	Southwest-Mo. M.&M. Co	Southwest-Mo. M. & M. Co				80 acres	6	26	25	3	100	6
Tooker, C. W	No. Four Drill Co	Coleman & Scott		2,500		80 acres	8	26	25	1	235	
United Zinc Cos	K. C.-Aurora M. Co	K. C.-Aurora M. Co	5,000		Missouri		7	26	25			
	Sludge Mill	Milton M. Co	25,000		Missouri							
	Sludge Mill	Aurora Sludge Mill Co.		3,000								
Totals										38		

GREENE COUNTY.

Showing same as above except operating company.

Name of landowner.	Name of first lessee.	Capitalization.	Amount invested in land and plant.	Incorporated under laws of	Land controlled.	Sections.	Township.	Range.	No. of shafts.	Average depth of shaft.	Outlets.
Duncan, J. P. K	Causer & Jones				120 acres	32	30	24			
Reitz, P. J	Badger L. & Z. Co	$12,500	$8,000	Wisconsin	77 acres	27	29	21	1	265	
The Daisy M. & M. Co	W. Martin Jones, Jr				65 lots	35 36	29	21			

Table 22—Showing Name of Operating Company and Mine Equipment.

LAWRENCE COUNTY.

Name of operating company.	Mine Equipment.														
	No. of concentrating plants	Daily capacity in tons	No. of hand jig plants	No. engines	No. of pumps	Capacity per min. in gal	No. of boilers	No. of drills	Kind of power.	No. of hoisters	Kind of power.	No. of crushers	Kind used.	No. of air compressors	No. of tables
E. M. Apple & Co					1		1								
Stone & Ripper			1												
E. K. Johnston & Co	1	80		2	2		1			2	Steam	1	Aurora		
Federal Zinc & Lead Co	1	150		3	2	500	3	4	Air	3	Steam	1	Carterville	1	1
Silver Star Mining Co	1	100		4	5	1,800	3	3	Steam	4	Steam	1	Neosho	1	
Gordon-Emmons & Co	1	70		2	2		2	2	Air	1	Steam	1	Aurora	1	
Aurora Mining Co	1	75		2			2	2	Air	1	Steam	1		1	
W. A. McCullough			1							1					
Hunter & Company			1							1	Horse,				
Reynolds & Sparks			2	2	1	20				2	Steam				
Keystone Mining Co			2	1			1			2	S. & H				
Mystic Valley Co	1	100		1	2	200	3	1	Steam	1	Steam	1	Rogers		
Coleman Bros	1	100		1	2	400	2	1	Steam	1	Steam	1	Carterville		
Julia West Mining Co	1	200		2	2	200	2	6	Air	3	Steam	1	Aurora	1	2
W. H. Scott Mining Co	1	200			3	4,500	1	2	Steam	2	Steam	1	Neosho	1	
Sphalerite Mining Co	1	100		1	1		3	2	Air	1	Steam	1	Aurora	1	
Coleman & Scott	1	75		3	3	1,000	4			3	Steam	1	Aurora		
Kansas City-Aurora Mining Co	1	200		2	1	100	3	3	Air	1	Steam	1	Neosho	1	2
Milton Mining Co	1	100			3		3	4	Steam	4	Steam	1	Joplin	1	1

GREENE COUNTY.

Badger Lead & Zinc Co	1	100		2	3	150	3			1	Steam	1	Freeman	1	

Table 23—Showing Name of Operating Company, Number of Employes and Wages Paid, Number of Days Mine was Worked, Tonnage and Value of Lead and Zinc Mined During 1909.

LAWRENCE COUNTY.

Name of operating company.	Employes and wages.										No. of days mine was worked during 1909...	Tons of zinc mined.....	Value of zinc mined....	Tons of silicate mined..	Value of silicate mined..	Tons of lead mined.....	Value of lead mined....,	Total Value of all lead and zinc ores mined...
	Ave. No. of miners employed	Ave. daily wage...	Ave. No. of men to look after roof.	Ave. daily wage...	Ave. No. of top and mill men....	Ave. daily wage...	Ave. No. of prospectors.........	Ave. daily wage...	Ave. No. of other help...........	Ave. daily wage...								
Stone & Qualls...........	6	$2.00							3	$4.50		750	$30,000	180	$3,600	6	$360	$33,960
E. M. Apple & Co.........	3	2.00			1	$2.00					200	139	5,714	48	564			6,278
Stone & Ripper...........														120	2,400			2,400
Clevel'd-Aurora Land (op's)												107	3,383	347	8,522	12	585	12,490
E. K. Johnston & Co......	5		1		5	2.00						188	6,862	366	8,642	5	210	15,714
Federal Zinc & Lead Co....	12	2.50			7	2.50	2	$2.50	2	2.00	300	887	37,167	4	66	63	3,656	40,889
Silver Star Mining Co......	12	2.75	3	$2.75	9	2.50			6	2.50	300	293	12,897					12,897
Gordon-Emmons Co.......	6	2.00	1	3.00	4	2.25						193	7,564	38	789	37	1,991	10,344
Aurora Mining Co.........	15	2.25	1	2.75	7	2.50			4	2.00	150	142	6,304			49	2,709	9,013
W. A. McCullough........	2	2.00	2	2.00			2	2.00			300	95	3,628	13	367	9	440	4,435
Sphalerite Mining Co......												109	5,109					5,109
Wallace & Salts..........												7	200	3	54			254
Hunter & Co............	2	2.37	1	2.50	3	2.00					200			53	1,431	2	100	1,531
Reynolds & Sparks........	4	2.00			3	2.00						4	173	103	2,796	3	130	3,099
Keystone Mining Co.......	12	2.25			7	2.25					300	270	12,737					12,737
Mystic Valley Co.........	7	2.25	2	2.25	7	2.00	2	2.25			252	200	6,408					6,408
Coleman Bros............	30	2.66			15	2.16					307	1,673	71,509					71,509
Julia West Mining Co......	7	2.00	2	2.00	4	2.00					30	30	1,260			10	513	1,773
W. H. Scott Mining Co....	11	2.20	1	3.00	7	2.00	2	2.00			300	581	26,261					26,261
Sphalerite Mining Co......												221	8,502					8,502
Southwest Mo. M.& M. Co..	12	2.25	4	2.25	12	2.25	2	2.25			103			290	8,250			8,250
Coleman & Scott..........	11	2.63			9	1.97					151	400	19,257					19,257
K. C.-Aurora Mining Co....	35	2.37			8	2.55					245	555	19,584	1,297	27,780	60	2,830	50,194
Milton Mining Co.........					4	2.25								1,041	23,384	22	1,038	24,422
Aurora Sludge Mill Co......					4	1.75						185	6,030	230	2,950			8,980
Totals...............	192	$2.26	18	$2.50	116	$2.16	10	$2.20	15	$2.75		7,029	$290,549	4,133	$91,595	278	$14,562	$396,706

GREENE COUNTY.
Showing same as above.

Name of operating company.	Ave. No. of miners employed	Ave. daily wage	Ave. No. of men to look after roof	Ave. daily wage	Ave. No. of top and mill men	Ave. daily wage	Ave. No. of prospectors	Ave. daily wage	Ave. No. of other help	Ave. daily wage	No. of days mine was worked during 1909	Tons of zinc mined	Value of zinc mined	Tons of silicate mined	Value of silicate mined	Tons of lead mined	Value of lead mined	Total Value of all lead and zinc ores mined
Causer & Jones..........																57	$2,985	$2,985
Badger Lead & Zinc Co....	12	$2.00			10	$2.00	2	$2.50			260	677	$35,881			82	4,661	40,542
W. Martin Jones..........												95	4,512			141	2,172	6,684
Totals...............	12	$2.00			10	$2.00	2	$2.50				772	$40,393			280	$9,818	$50,211

Table 24—Showing Name of Land Owner, First Lessee, Operating Company, Capitalization, Amount Invested, Land Controlled, Number and Average Depth of Shafts, Number of Outlets.

NEWTON COUNTY.

Name of land owner.	Name of first lessee.	Name of operating company.	Capitalization.	Amount invested in land and plant.	Incorporated under laws of	Land controlled.	Location of land.			No. of shafts.	Ave. depth of shaft.	Outlets.
							Sections.	Township.	Range.			
Allen, J. W.	Sunrise Mining Co.	Sunrise Mining Co.		$30,000		20 acres	10	26	33	2	130	3
Chase, Geo. N.	Silver Plume M'g. Co.	Silver Plume M'g. Co.	$1,000,000	1,000,000	So. Dakota		11	25	31	1	230	1
Davis, J. B. & N. Y.	Mears M. & M. Co.	Mears M. & M. Co.				30 acres	12 13	25	31			
Gormley, L. H.	Empire Zinc Co.	Empire Zinc Co.				16 lots	11	26	29	1	90	1
Granby M. & S. Co.	Mears Mining Co.	Bracken, Hughes, Dean & West	250,000		Missouri	62 acres	12 13	25	31			2
Granby M. & S. Co.	Little Boss M. Co.	Woodcock & Sons		2,000		35 acres	6	25	30	1	100	
Granby M. & S. Co.	Fortune Teller M. Co.	Fortune Teller M. Co.		7,500		20 acres	5 6	25	30	1	90	3
Granby M. & S. Co.	Dick Stapp M. Co.	Dick Stapp M. Co.		8,000		8 acres	6	25	30	2	112	2
Granby M. & S. Co.	Goldenrule M. Co.	Goldenrule M. Co.				30 acres	6	25	30			
Granby M. & S. Co.	Spurgeon M'g. Co.	Spurgeon M'g Co.				80 acres						
Haines Land	Adam Scott	Mary E. Mining Co.	15,000	6,500	Missouri	20 acres	10	26	33	1	112	
Hoge, W. V.	B. J. Morrow, Jr.	Hunt & Co.				20 acres	3	26	33	2	70	
Hoge, W. V.	T. J. McKenney	T. J. McKenney				20 acres						
Ideal Mining Co.	Blizzard & Vaughan	Blizzard & Vaughan	100,000	50,000	Missouri	20 acres	22	27	33	4	60	
Leake, Lottie C.	Clark Craycroft	Clark Craycroft					14	26	33	5	50	
Mattes Brothers	Duguesne M'g. Co.	Duguesne M'g Co.	1,000,000		Missouri	92 acres	19 24	27	33	2	150	
McCown Estate	Adam Scott & Co.	Adam Scott & Co.		25,000		40 acres	10	26	33	8	120	
McCown Estate	U. G. Wilson	U. G. Wilson		40,000		20 acres	10	26	33	2	130	1
Milne, Morrow & Baker		Milne, Morrow & Baker				20 acres	35	26	33	2	90	
Newman, Albert	Milne, Drake & Mitchell	Silver Moon M'g. Co.	20,000	20,000	Missouri					4	70	2
O'Neill, Jas., Estate	Silver Dime M'g. Co.	Silver Dime M'g Co.				40 acres	32	26	32			
St. Paul Mining Co.	Dahnke, Painter & Tatem	Skaggs & Pearson								2	40	2
St. Paul Mining Co.	Alladin L. & Z. Co.	Don McRuer		9,000			10	25	33	5	95	2
Zeta Land & M'g. Co.	Clark Craycroft	Clark Craycroft	36,000		Missouri		11	26	33	4	60	
Totals										49		

Table 25—Mine Equipment, Natural Gas Used, Ventilation of Mine.

NEWTON COUNTY—Continued.

Name of operating company.	Mine Equipment.														
	No. of concentrating plants	Daily capacity in tons	No. of hand jig plants	No. engines	No. of pumps	Capacity per min. in gal.	No. of boilers	No. of drills	Kind of power.	No. hoisters	Kind of power.	No. of crushers	Kind used.	No. of air compressors	No. of tables
Sunrise Mining Co	1	100		1	2		2	3	Air	1	Steam	1	Blake	1	
Silver Plume M'g. Co	1	400		6	3	900	2	8	Air	1	Steam	2	Neosho	1	1
Empire Zinc Co	2	300		2	2	200	3	2	Air	2	Steam	2	Blake	1	
Bracken, Hughes, Dean & West	2	200		3	2		9	4	Air	2	Steam	4		1	
Wookcock & Sons	1	100		1	1		1	2	Steam	1	Steam	1	Neosho		
Fortune Teller M'g. Co	1	100		1	2	375	2	2	Steam	1	Steam	1	Aurora		
Dick Stapp M'g. Co	1	100		1	2		1	2	Steam	2	Steam	1	Neosho		
Mary E. Mining Co					1	100	1	1	Steam	1					
Hunt & Co										1	Horse				
Blizzard & Vaughan	1	200	2	1	1	150	3	2	Steam	2	Steam	1	Webb City		
Clark Craycroft			3							4	Horse				
Duquesue M'g. Co	1	400		1	1	160	3	7	Air	2	Steam	1	Webb City	1	3
Adam Scott et. al	5	500		5	8		8	8	Air & steam	8	Steam	5	Webb City	3	
U. G. Wilson	1	125		1	2	100	2	4	Air	2	Steam	1	Galena	1	
Milne, Morrow & Baker			2							1					
Silver Moon Mining Co	1	150		1	3		2	4	Air	1	Steam	2		1	1
Skoggs & Pearson							1			2	Horse & steam				
Don McRuer	1	100	1	4	4		3	4	Air	2	Steam	1	Carterville	1	
Clark Craycroft			2							2					
Totals			10	28	34		43	53		38		23		12	5

Table 26—Showing Name of Operating Company, Number of Employes and Wages Paid, Number of Days Mine was Worked, Tonnage and Value of Ore Mined During 1909.

NEWTON COUNTY—Continued.

Name of operating company.	Employes and wages.								No. of days mine was worked during 1909...	Tons of zinc mined.....	Value of zinc mined..	Tons of silicate mined..	Value of silicate mined..	Tons of lead mined.....	Value of lead mined....	Total value of all lead and zinc ores mined...
	Ave. No. of miners employed.......	Ave. daily wage...	Ave. No. of men to look after roof...	Ave. daily wage...	Ave. No. of top and mill men........	Ave. daily wage...	Ave. No. of other help............	Ave. daily wage...								
Sunrise Mining Co	25	$2.50	1		7	$2.50			190	906	$38,047			160	$9,173	$47,220
Silver Plume M'g. Co	36	2.50	1	$2.50	15	2.40			187	344	15,835			2	130	15,965
Mears M. & M. Co	16				9					300	12,428			40	2,080	14,508
Empire Zinc Co	4	2.00	1	3.00	4	2.00			150	90	2,203	216	$4,943	1	50	7,196
Bracken, Hughes, Dean & West	18	2.20	1	5.00	18	2.20	2	$2.00	275	1,396	55,652			50	2,652	58,304
Woodcock & Sons	7	2.00	1	2.00	7	2.00			100	500	20,000					20,000
Fortune Teller M'g. Co	8	2.40			9	2.50			300			1,400	34,318	1	66	34,384
Dick Stapp M'g. Co	12	2.25	1	2.50	5	2.50			120	75	3,000	75	2,000	20	1,000	6,000
Golden Rule M'g. Co	13				9					426	17,040	249	6,225	8	432	23,697
Spurgeon M'g. Co										113	4,520	419	10,475	169	8,450	23,445
Mary E. Mining Co	2	2.75			1	3.00			75	10	350					350
Hunt & Co										1		151	3,913			3,913
T. J. McKenney												359	6,994			6,994
Blizzard & Vaughn	4	2.50			4	2.50						271	5,509			5,509
Clark Craycroft	6				6							283	5,281	1	59	6,001
Duquesne M'g. Co	45	2.50	1	2.50	6	2.75			310	1,691	76,377			324	18,661	95,038
Adam Scott, et. al	100	2.50			40	2.25			300	925	38,533	284	7,100	996	55,755	102,479
U. G. Wilson	30	2.50	1	2.50	12	2.50	18	2.50	300	667	20,863			552	30,188	51,051
Milne, Morrow & Baker									150			140	5,040			5,040
Silver Moon Mining Co									150	80	2,948			11	599	3,547
Silver Dime Mining Co														84	4,724	4,724
Skaggs & Pearson	6	2.00							68			55	1,559			1,559
Don McRuer	16	2.25	1	2.25	7	2.42			180	390	15,799	132	3,239	72	3,688	22,726
Clark Craycroft												29	673			1,063
Totals	348	$2.34	9	$2,78	159	$2.42	20	$2.25		7,913	$323,595	4,063	$97,269	2,491	$137,707	$560,713

YES AND WAGES PAID, NO. DAYS MINE WAS WORKED, ETC.—Continued.

Employes and wages.									No. days mine was worked in 1909.	Tons of zinc ore mined.	Value of zinc mined.	Tons of silicate mined.	Value of silicate mined.	Tons of lead ore mined.	Value of lead ore mined.	Tons of dry bone sold.	Value of dry bone sold.	Total value of all lead and zinc ores.
	Ave. No. top and mill men.	Ave. daily wage.	Ave. No. boys.	Ave. daily wage.	Ave. No. prospectors	Ave. daily wage.	Ave. No. other help.	Ave. daily wage.										
	9									57	$2,446							$2,446
										66	2,064			13	$608			2,672
	9	$2.75								547	20,594			227	12,084			32,678
.00	25	3.00	2	$1.50					200	2,082	83,396			916	50,540			133,936
.50	7	2.25							275	724	31,510							31,510
	6									131	5,650			10	542			6,192
										201	8,585			2	86			8,670
										730	31,782							31,782
	4									131	5,650			10	535			6,185
										253	10,627							10,627
	2									10	337			37	2,037			2,374
	2									38	1,693							1,693
	3									43	2,299							2,299
										62	2,479			37	2,041			4,520
	5									48	1,869			10	540			2,409
.60			1	2.00					160	118	5,656			10	459			6,115
										177	6,239			33	1,675			8,414
										19	468			14	692			1,160
	2	2.50							100	27	1,394			2	97			1,491
	1	3.00							150	25	1,048			7	312			1,360
	6	2.25							100	354	11,599			31	1,496			12,095
	2	3.00								39	1,459			10	499			1,958
	1	3.00								46	1,668			9	507			2,175
									160	4	150			16	899			1,049
	11	2.50							300	177	6,239			32	1,675			7,914
	1	3.00							150	35	1,422			24	1,290			2,712
.75	3	2.75			3	$2.75			36					4	224			224
									200					42	2,210			2,210
.00	5	2.50								39	1,037			66	3,392			4,429
.50	12	2.50							270	1,070	49,734							49,734
.00	9	3.00					3	$2.25	300	2,556	107,959							107,959
	12	2.30	1	1.00					60	243	9,334			29	1,443			10,777
	15	3.00					20	2.25	180	448	21,737			47	2,565			24,302
	5									12	409			4	38			447
.50	15									339	9,920							9,920

Employes and wages.									No. days mine was worked in 1909	Tons of zinc ore mined	Value of zinc mined	Tons of silicate mined	Value of silicate mined	Tons of lead ore mined	Value of lead ore mined	Tons of dry bone sold	Value of dry bone sold	Total value of all lead and zinc ores
Ave. daily wage	Ave. No. top and mill men	Ave. daily wage	Ave. No. boys	Ave. daily wage	Ave. No. prospectors	Ave. daily wage	Ave. No. other help	Ave. daily wage										
	9									57	$2,446							$2,446
										66	2,064			13	$608			2,672
	9	$2.75								547	20,594			227	12,084			32,678
.00	25	3.00	2	$1.50					200	2,082	83,396			916	50,540			133,936
.50	7	2.25							275	724	31,510							31,510
	6									131	5,650			10	542			6,192
										201	8,585			2	86			8,670
										730	31,782							31,782
	4									131	5,650			10	535			6,185
										253	10,627							10,627
	2									10	337			37	2,037			2,374
	2									38	1,693							1,693
	3									43	2,299							2,299
										62	2,479			37	2,041			4,520
	5									48	1,869			10	540			2,409
.60			1	2.00					160	118	5,656			10	459			6,115
										177	6,239			33	1,675			8,414
										19	468			14	692			1,160
	2	2.50							100	27	1,394			2	97			1,491
	1	3.00							150	25	1,048			7	312			1,360
	6	2.25							100	354	11,599			31	1,496			12,095
	2	3.00								39	1,459			10	499			1,958
	1	3.00								46	1,668			9	507			2,175
									160	4	150			16	899			1,049
	11	2.50							300	177	6,239			32	1,675			7,914
	1	3.00							150	35	1,422			24	1,290			2,712
.75	3	2.75			3	$2.75			36					4	224			224
									200					42	2,210			2,210
.00	5	2.50								39	1,037			66	3,392			4,429
.50	12	2.50							270	1,070	49,734							49,734
.00	9	3.00					3	$2.25	300	2,556	107,959							107,959
	12	2.30	1	1.00					60	243	9,334			29	1,443			10,777
	15	3.00					20	2.25	180	448	21,737			47	2,565			24,302
	5									12	409			4	38			447
.60	15									339	9,920							9,920

TABLE 28—SHOWING NAME OF OPERATING COMPANY, NO. EMPL

Name of Landowner.	Name of First Lessee.	Name of operating company.	Ave. No. miners employed	Ave. daily wage	Ave. No. men to look after roof
Continental Zinc Co	H. R. Drury	H. R. Drury	30		1
" "	Lycan-Stillwell M. Co	Lycan-Stillwell Co			
" "	Temagami M. Co	Temagami M'g. Co	28	$2.50	
" "	Continental Z. Co	Continental Zinc Co	75	2.42	1
" "	Kohinoor Z. Co	Kohinoor Zinc Co	10	2.25	3
" "	Kohinoor Z. Co	W. Campbell & Co	4		
" "	Kohinoor Z. Co	W. H. Mahoney & Co			
" "	Captain M. Co	Captain Mining Co			
" "	Sheldon M. Co	Sheldon Mining Co	6		
" "	Cowhead M. Co	Cowhead Mining Co			
" "	Wright & Co	Wright & Company	3		
" "	Geo. Robinett	Geo. Robinett	4		
" "	Geo. Lurwick	Geo. Lurwick	5		
" "	Morris-Bowman & Co	Morris Bowman & Co			
" "	Federated M. & M. Co	Federated M. & M. Co	8		
Dougherty, Davey, Kane, et al	Harry Tibbens	Harry Tibbens	3	2.50	1
" " "	Charter Oak M. Co	Charter Oak M. Co			
" " "	Campbell & Co	Campbell & Co			
" " "	Brewer Black & Co	Brewer, Black & Company	4	2.50	
" " "	F. M. Carson	F. M. Carson	2	2.50	
" " "	Old Dominion M. Co	Old Dominion M'g. Co	20	2.50	
" " "	Lee Moss & Co	Lee Moss & Company	4	2.25	
" " "	McKnight Bros	McKnight Bros	2	2.56	
" " "	Wade & Company	Wade & Company	3	2.50	
" " "	H. T. Talbott	H. T. Talbott			
" " "	Jackson & Co	Jackson & Company	3	2.50	
Dougherty, Davey, et al	Ed. Gilbreath	Ed. Gilbreath	1	2.75	1
" " "	Irwin & Co	Irwin & Company	3	2.50	
" " "	Garnett M. Co	Garnet Mining Co	20	2.50	2
Davey, Thos. N	Davey Crockett M. Co	Davey Crockett M. Co	22	2.50	2
Davey, Thos. N	Vesuvius M. Co	Vesuvius Mining Co	21	2.75	3
Elliott, C. E	Old Judge M. Co	Old Judge Mining Co	7	2.25	2
Elliott, C. E	Red Wing M. Co	Red Wing Mining Co	38	2.50	
Empire Zinc Co		Empire Z. Co. (Scrappers)	8		
Excelsior Z. & L. Co	Excelsior Z. & L. Co	Excelsior L. and Z. Co	75	1.90	60

loyes and wages.								No. days mine was worked in 1909.	Tons of zinc ore mined	Value of zinc mined	Tons of silicate mined	Value of silicate mined	Tons of lead ore mined	Value of lead ore mined	Tons of dry bone sold	Value of dry bone sold	Total value of all lead and zinc ores
Ave. No. top and	Ave. daily wage	Ave. No. boys	Ave. daily wage	Ave. No. prospectors	Ave. daily wage	Ave. No. other help	Ave. daily wage										
10	...	...	...	...	...	...	...	...	667	$25,603	...	...	12	$665	...	...	$26,268
...	...	...	...	...	...	...	...	...	107	4,533	...	...	20	1,123	...	...	5,656
...	...	...	...	...	...	...	...	...	442	17,165	...	...	32	1,639	...	...	18,804
3	$2.50	...	...	...	...	...	...	200	...	...	5	$64	120	6,494	...	...	6,558
10	2.75	...	...	...	...	...	...	108	435	19,632	...	...	...	...	...	...	19,632
...	...	...	...	...	...	...	...	...	3,315	161,099	...	...	949	52,724	...	...	213,823
18	3.00	...	...	...	...	...	...	266	1,338	53,726	...	...	449	24,961	...	...	77,697
13	3.50	...	...	...	...	...	...	100	581	26,894	...	...	81	4,085	...	...	30,979
22	2.80	...	...	...	...	...	...	310	2,344	93,676	...	...	631	33,410	4	84	127,170
10	2.50	...	...	...	...	...	...	235	739	33,013	...	...	...	...	...	...	33,013
...	...	...	...	...	...	...	...	...	50	1,618	5	126	26	1,324	...	...	3,558
7	...	...	...	...	...	...	...	...	49	1,850	...	...	9	455	...	...	2,305
...	...	...	...	...	...	...	...	...	266	10,277	...	...	9	471	...	...	10,748
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
401	$2.61	13	$1.60	70	$2.55	88	$2.72	...	201,150	$8,207,360	1,045	$25,465	34,439	$1,724,299	101	$3,270	$9,960,394

TABLE 28—SHOWING NAME OF OPERATING COMPANY, NO. EMPLOYES

Name of Landowner.	Name of First Lessee.	Name of operating company.	Ave. No. miners employed	Ave. daily wage	Ave. No. men to look after roof	Ave. daily wage
United Zinc Cos.	Conqueror Z. & L. Co	Conqueror Zinc & Lead Co	12			
United Zinc Cos	J. H. Pittman	J. H. Pittman				
Venango Royalty Co	Penn Zinc Co	Penn Zinc Co				
Walker, Jos. I	Sawyers M. Co	Sayers Mining Co	9	$2.50		
Ware, Bowman & Scott	Oakwood M. Co	Oakwood Mining Co	25	2.80	2	$3.00
" "	Dividend L. & L. Co	Dividend Land & Leasing Co				
" "	Dividend L. & L. Co	Little Princes M'g. Co	40	3.00	1	
" "	Dividend L. & L. Co	Genessee Mining Co	40	1.10	3	3.10
" "	Dividend L. & L. Co	Silver Leaf Development Co	50	2.75	2	3.50
Weaver, J. W	Weaver-Tri-City M. Co	Weaver-Tri-City M'g. Co	20	2.50		
Weyman, Henry		Henry Weyman Land				
What Cheer Zinc Co	Boston Get There Z. Co	Boston Get There Zinc Co	4			
Wheeler, J. M	Mrs. E. A. Norris	Sewell M'g. Co				
		Miners and prospectors not reported by operating Co.	1,500			
		Totals	7,344	$2.56	318	$2.94

RECAPITULATION—WESTERN DISTRICT.

Table 29—Showing Acres of Land, Number of Employes and Wages Paid, Tonnage and Value of Ores Mined During 1909, by Counties.

Counties.	No. of miners empl'yed	Av. daily wage.	No. of other help.	Av. daily wage.	Total No. of employes	Zinc.		Silicate.		Lead.		Drybone.		Total value all minerals mined.
						Tons.	Value.	Tons.	Value.	Tons.	Value.	Tons.	Value.	
Greene	12	$2.00	12	$2.25	24	772	$40,393	......	....	280	$9,818	......	......	$50,211
Jasper	7,344	2.56	2,890	2.48	10,234	201,150	8,207,360	1,045	$25,465	34,439	1,724,299	101	$3,270	9,960,394
Lawrence	192	2.26	159	2.40	351	7,029	290,549	4,133	91,595	278	14,562	......	......	396,706
Newton	348	2.34	193	1.99	541	7,913	323,595	4,063	97,269	2,491	137,707	61	2,142	560,713
Totals	7,896	....	3,254	....	11,150	216,864	$8,861,897	9,241	$214,329	37,488	$1,886,386	162	$5,412	$10,968,024

MINE INSPECTIONS, LEAD AND ZINC

WESTERN DISTRICT

LEAD AND ZINC MINE INSPECTIONS.

CHAS. P. WALLACE AND W. S. BROWN, Inspectors.

LAWRENCE COUNTY.

Aurora Mining Company.—I inspected this mine on December 2d. The members of the firm comprising the Aurora Mining Company are Messrs. Beechwood and Brunk, operators, with Larry Brunk, superintendent. There was no one present on day of inspection from whom I could obtain the landowner's name. The company has one shaft 150 feet deep, with an outlet to the Federal mine. A traveling way around the bottom of the shaft is provided for, and all timbering in the shaft and mine was good. Hoisting machinery and equipment was in fair condition. Two air drills are operated, the air being supplied by the Federal Lead Company. Ventilation in the mine is good. Six miners and four top men were at work at the time of inspection. I recommended that no nails be used in ends of tamping bars, and, when points are necessary, to use copper points. (Inspected by Wallace.)

Coleman Bros.' Mine.—I made an inspection of this mine on March 27th, 1909, finding conditions satisfactory. There was some dangerous looking ground in the lower levels at the mill shaft, but no force of men were working there—a couple of prospectors being the entire crew at this shaft. As the drift which these prospectors were driving was in hard lime—the ore having pinched down and they were to be taken out, I saw no necessity for any recommendations at this point. The principal operations of this company are now at the north shaft, where quite a large crew of men is employed, but later on operations will probably be begun in the upper level at the mill shaft.

Second Inspection.—On December 3d I made a thorough inspection of this mine, which is located one-half mile southeast of Aurora. Coleman brothers are operating as first lessees under a lease obtained from Mrs. E. J. Robinson, the landowner. Two shafts 260 feet deep are being operated. I inspected all timbering, hoisting machinery and cables, and found same in fair condition, except one cable at north shaft, which was well worn, but a new cable had already been provided and ready to be put on. Six air drills were being operated, and thirty miners were employed, with sixteen top and mill men. A concentrating mill is on the lease, and the operators only recently installed a centrifugal pump and motor for draining the mine. I recommended that guard rails be placed at the top of the shafts; that wood tamping bars be used and that no nails be placed in ends of same. I also ordered a rail or cable to protect the old stope near mill shaft, and that exploders be kept separate from the powder in the ground, so that in case exploders are set off accidentally, the powder would not be exploded at the same time. Operations are now being conducted at the north shaft and in the upper level at mill shaft. (Inspected by Wallace.)

Daisy Bell Mine was inspected December 2, 1909. The mill on this land is operated by Johnson and Horine, and the ground is contracted to a co-partnership, composed of James Houseright, Henry Houston, Jos. Crowell, Chas. Crowell and Fred. Bryan, who are working in the mine. The shaft is known as the White Rose shaft, 130 feet deep, and comes down into a drift 40 feet high. This is the same mine in which, on September 18th, four men lost their lives. I made a careful inspection of the mine with Inspector Brown at the time of the accident, and considered the ground so dangerous that written notice was given to owners not to work men in this mine. I visited the mine on the above date to see if my order was being obeyed. Mr. Houseright and the other men working with him in the mine are doing so at their own risk. After looking the drifts over carefully I warned them that I consider the mine extremely dangerous, and again notified them not to employ any man or men to work in the mine. (Inspected by Wallace.)

Federal Zinc and Lead Company Mine.—I inspected the Federal mines, located one-half mile east of Aurora, on December 2d. The company has two shafts, one fifty feet deep and the other one hundred forty-four feet deep. The timbering, hoisting machinery and cables were all in good condition. Trap doors were provided for at the shafts; one at the north shaft was in good order, while the other at the mill shaft was very poor. Ventilation in the mine was good except in the prospect drift. Powder was stored in a powder magazine on top, and only enough for one day's supply was taken underground. The company was operating two air drills. Eight miners and seven top men were at work on date of inspection. I recommended a new frame or box for well and dump in the shaft house over mill shaft; also, a guard rail for stairs leading to shaft house over north shaft; hand rails at collars of all shafts in operation; guard rail or cable protecting the old stope near mill shaft, and that no nails be used in ends of tamping bars, copper points to be provided for the men. (Inspected by Wallace.)

No. 4 Drill Company Mine.—This mine is located one and a half miles east of Aurora. I made a careful inspection of same on December 3d. This is comparatively a new mine. The shaft, which is 225 feet deep, was sunk this year, and a 200-ton mill was also completed in July of this year. The equipment is complete and up to date, and the mine is in excellent condition, except that better ventilation should be provided. I recommended that the collar of the shaft be built up level with the concrete foundation of the shaft house, and that hand rails be placed around the shaft opening. Also advised that exploders be kept separate from powder in the ground and that wood tamping bars be used, but not to allow nails to be placed in ends of same. In order to improve the ventilation in the mine, I directed that as soon as the heading of the north drift is driven from under a pond (at time of inspection it was directly under a pond) a drill hole should be drilled tapping the drift and a suction fan should be placed over the drill hole, thus giving circulation of air through the mine. (Inspected by Wallace.)

No 5 Mine, operated by W. H. Scott. On December 3d I made a thorough inspection of this mine, which is located one and a half miles east of Aurora, on the Fisher and Rousch land. Two shafts, each 265 feet deep, are operated, with outlets to the Boston-Aurora mine. The bottom of the shafts open to

Google

one side only. The timbering was good, and the hoisting equipment, cables and trap doors were in good condition. Three air drills are operated, and twelve miners and eight top and mill men are employed. A 150-ton concentrating mill is on the lease. I made the following recommendations: That guard rails be placed at collar of shaft; that loose rock be kept cleared away from around collar of shaft; that wood tamping bars be used with copper points if necessary. I found several tamping bars made of pieces of pipe with wood plugs in the ends. These I ordered taken out of the ground, so that the men could not use then. The formation at this mine like that at the No. 4 Drill Co. mine and the upper ground at Coleman Bros. mine is such that frequent trimming of the sides of the drifts, near the headings is necessary. It appears that this work is carefully looked after. (Inspected by Wallace)

Scott, Coleman and Company.—This mine is on the Fisher and Rausch land, the Scott, Coleman and Company lease covering some twenty acres, and is entered through two shafts, the mill shaft being six by eight feet in the clear and 265 feet deep. These shafts are connected, and connection has also been made through drifts to adjoining mines. I was called to Aurora on Friday, March 26th, by a telephone message, notifying me of an accident that had occurred in this mine and which resulted in the death of Benjamin Ray. My report on the cause of the accident will be found under the heading "Reports of Accidents." Arriving at Aurora I met Mr. Scott, the manager of the mine and one of the owners, and, together with the ground foreman, Mr. Bohannon, we went into the mine and made a thorough examination of same. Mr. Scott, the manager, has had large experience in the mines of the Aurora district and bears the reputation of being a very careful and considerate operator. My examination tends to convince me that the accident did not occur through neglect on the part of the management to take proper precaution for the safety of the men. The ore body here seems to lie between limestone walls, and I made the suggestion that if upon investigation such was found to be the case, the drift be widened to take in all of the ore body and leaving the solid limestone for a wall instead of the more or less ore-bearing material. In my opinion, the roof is hard enough to permit of a wider drift being cut. This would greatly lessen the danger from material falling from sides of drift. On day I visited this mine twelve ground men and eight top men were employed. (Inspected by Wallace.)

Southwest Missouri Mining Company.—This mine is located on the W. P. Stewart and Dalby land, one mile northeast of Aurora. J. C. Rohrer of Aurora is manager for the operating company. Two shafts, with an average depth of 95 feet, are operated, with openings to one side only. Ventilation in the mine is good, provided through three air shafts. The timbering in the shaft is poor, and in the mine there is none. Hosting machinery only fair. The cable was in good condition, but I noticed that the latch on the hook was without a spring. The trap door at the mill shaft was broken while I was there, and I ordered that a new one be placed at once. On date of inspection, December 2d, twelve miners and fifteen top and mill men were employed. I was informed that the mine would close down shortly to build a hopper at mill and at the west shaft and for the purpose of making repairs generally. The principal product of the mine is silicate. I made the following recommendations: To install signal bell cord at west shaft; that west shaft be laced; to secure new spring for latch of hook; that only wooden tamping bars be used; that exploders be kept separate from powder; that an extension ladder be furnished for use in examining and trimming the roof, and to see to it that same is used every day and the roof closely watched. (Inspected by Wallace.)

NEWTON COUNTY.

Certified Check Mining Company.—On November 30th I made an inspection of the mine operated by this company. I found a very badly worn cable in use, too dangerous for men to ride up and down the shaft on. No one in authority being at the mine on day I made inspection, I sent written notice to the superintendent, J. R. Underwood, at Granby, and received the following answer: "Yours of the 4th inst. received and contents noted. We have changed ends with the cable mentioned and thus made it alright. The mine is shut down now, but I will see that there is a new cable there when we start up." (Inspected by Brown.)

Columbus Zinc Mining Company.—This company holds a sublease on forty acres of land from C. Bartlett et al. The land is owned in fee by R. Robertson, and is located in section 24, township 27, range 33, Newton county. There are two shafts on the lease which are 152 feet deep, but only one is worked. There are six drifts from the main shaft, with an average height of ten feet and an average width of twelve feet. There is a new mill on the lease, with a daily capacity of 100 tons. Sixteen miners and seven top and mill men are employed at the mine. I inspected this mine on September 30th and found the top structures, hoisting machinery, cables, trap doors and tubs to be new and in good condition. The shafts are connected by a drift, thus giving the mine natural ventilation. The timbering in the shaft was good, and the drifts were in good condition. (Inspected by Brown.)

Duquesne Mining Company.—This company is operating under a first lease 100 acres of land owned in fee by Mattes Brothers, and located in section 24, township 27, range 34, Newton county. The mine is entered by two shafts 150 feet deep and connected by a drift. The ground is of a sheet formation, and the drifts average about 12 feet high and 30 feet between the pillars. A concentrating plant on the property has a daily capacity of 400 tons. Fifty-five miners and twenty top and mill men are employed. I inspected this mine on October 14th and found all top structures, hoisting machinery, cables, trap doors and tubs in good condition. The timbering in the shaft was good and the roofs of the drifts were well trimmed. The ventilation was good, and, in fact, everything in and about the mine was in a satisfactory condition. (Inspected by Brown.)

Elenora Mining Company.—This is a copartnership, composed of Monroe Welton and F. W. Kobusch of Joplin. The company holds a first lease on 40 acres of land located in section 23, township 27, range 33, Newton county. The land is owned in fee by Marion Staples of Joplin. The mine is entered by a shaft 160 feet deep. There are two drifts operated from this shaft, with an average height of 12 feet and an average width of 20 feet. There is a mill on the lease with a daily capacity of 50 tons. Four miners and six top and mill men were employed at the mine on day inspection was made. I inspected this mine on September 29th and found all top structures, hoisting machinery, cables, trap doors, top cars, tubs and the timbering in shaft to be in good condition. The drifts were in good condition. The ventilation was bad. There was a drill hole near the head of the drift, but it had been clogged with tailings. I recommended to Mr. Welton that he reopen this hole, and, if necessary, to install a suction fan over it, so as to improve the ventilation. He promised to do this at once. (Inspected by Brown.)

Emperor Mining Company.—This company is operating under a first lease on twenty acres of land owned by H. H. Gregg of Joplin, and located in section 19, township 27, range 33, Newton county. The mine is entered by two shafts, one being 190 feet deep and the other 195 feet deep. The company is operating at the 195-foot level, working two drifts at this level, averaging 30 feet in height and 25 feet in width. The company's concentrating mill on this property has a daily capacity of 150 tons. Seven miners and six top and mill men are employed. I inspected this mine on October 12th and found the hoisting machinery, cables, trap doors, tubs and timbering in shaft in good condition. I found several loose boulders in the roof of both drifts, and ordered them taken down at once. Ventilation in the mine was good. (Inspected by Brown.)

Fortune Teller Mine.—This mine is operated by W. W. Scholes of Granby under a first lease from the Granby Mining and Smelting Company. The lease comprises twenty acres, located in sections 5 and 6, township 25, range 31, Newton county. The mine is entered by two shafts, with an average depth of 90 feet, with an outlet to each shaft. I found the hoisting machinery, cables, trap doors and timbering in good condition. In the drift I found loose boulders in the roof and on the walls, which I ordered taken down at once. I also ordered a rail placed around the top of the shaft. The powder was stored in a powder house some distance from the shaft, and only enough was taken underground for one day's use. On date of inspection, November 30th, nine ground men and nine top and mill men were employed. Ventilation in the mine was good. (Inspected by Brown.)

Golden Rule Mine.—This mine is on the Granby Mining and Smelting Company land. B. F. Tabour of Neosho is operating on twenty acres under first lease, the land lying in section 12, township 25, range 31, Newton county. A. J. Painter is general manager and superintendent of the mine. Three shafts are sunk on the lease, with an average depth of 80 feet. I examined this mine on November 30th and found the timbering in the shaft to be only fair. The hoisting machinery, cables and trap doors were all in good order. Two steam drills were operated on day of inspection, and thirteen miners and nine top and mill men were employed. I ordered a hand rail placed around top of shaft. (Inspected by Brown.)

Halloween Mining Company.—This mine is owned and operated by William McKee of Joplin. He holds a sublease on ten acres of land from Adam Scott of Joplin. The land is owned in fee by the McCowen estate of Philadelphia, Pennsylvania. The land is located in section 10, township 26, range 33, Newton county. The mine is reached by a shaft 177 feet in depth. The ground is of a sheet formation. The drifts average about seven feet in height and about twenty-five feet in width. There is a concentrating mill on the lease with a daily capacity of 125 tons. Ten miners and seven top and mill men are employed at this mine. I made an inspection of this mine on October 18th and found the hoisting machinery, cables, trap doors and the timbering in the shaft to be in good condition. Upon inspection of the underground workings, I found a loose slab in the roof near the face of the right hand drift going from the shaft. It was about a foot thick and about sixteen feet in length, and it was in imminent danger of falling on the men who were working under it. I ordered the superintendent and foreman to have it taken down at once. The ventilation was bad, but the superintendent informed me that he was going to connect the mine with the drifts of the Alpha mine. This will greatly improve the ventilation. (Inspected by Brown.)

Lost Boy Mining Company.—This is a copartnership, composed of F. A. Malang, H. C. Murphy, William Leffen and L. Wise. F. A. Malang of Joplin is manager. The company holds a first lease on fourteen and a half acres of land owned by J. W. Allen of Joplin, and located in section 3, township 26, range 33, Newton county. The company just completed the sinking of three shafts to the ore level at an average depth of 114 feet. Operation of the mine will be suspended until after the erection of a concentrating mill. At the time this inspection was made only three miners and one top man were at work. I inspected this mine on October 19th and found the conditions in and about the mine to be satisfactory, with one exception, that the hoisting cable at shaft No. 3 was badly worn. I ordered the superintendent to remove this cable and to replace it with a new one. (Inspected by Brown.)

McRurer Mining Company.—This is a co-partnership composed of Don and J. T. McRurer, George Ward and others. Don McRurer is manager for the company, which holds under a sublease and operates 21 acres of land located in section 10, township 26, range 33, Newton county. The first lease is held by the Alladin Lead and Zinc Company of Joplin, and the land is owned in fee by the St. Paul Mining Company. The mine is reached by two shafts 99 feet in depth. The ground is of a sheet formation, and is cut about twelve feet in height and about twenty-five feet between pillars. There is a concentrating mill on the lease with a daily capacity of 150 tons. Twelve miners and seven top and mill men are employed. I made an inspection of this mine on October 18th and found all top structures, hoisting machinery, cables, tubs, trap doors, shafts and drifts to be in good condition. The ventilation was good. (Inspected by Brown.)

Mears Mine is operated by O. S. Johnston and others under a sublease from the Mears Mining Company, first lessees. The mine is located in section 12, township 25, range 31, and is owned in fee by the Granby Mining and Smelting Company (20 acres)) and J. B. Davis (29 acres). Two shafts are on the 49 acre tract controlled by the operator, having an average depth of 235 feet. I inspected this mine on November 30th and found the top structures and shaft in good condition. Examining the cable, I found a break near the hook, which was repaired before I left the mine. In my inspection of the drift I found a very dangerous bag in the roof near the face, which I ordered taken down. I also ordered a hand rail placed around the top of shafts, and these orders were complied with before I left the mine. On date of inspection sixteen miners and nine top and mill men were employed. (Inspected by Brown.)

Motor Mine.—N. N. Moyer of Chicago, Illinois, holds a first lease and operates on 40 acres of land located in section 19, township 27, range 33, Newton county, which is owned in fee by H. H. Gregg of Joplin. The mine is reached by two shafts 135 feet in depth. There are two drifts worked from these shafts with an average height of 15 feet and a width of 20 feet. The mining machinery embraces a complete concentrating mill with a daily capacity of 150 tons. Three air drills are operated in this mine. Fifteen miners and seven top and mill men are employed at this mine. I made an inspection of the mine on July 14th and found the hoisting machinery, cables, trap doors, tubs, etc., in good condition. An inspection of the underground workings showed the shafts, mine and ventilation to be in good condition. (Inspected by Brown.)

Puritan Mine.—This mine is located in section 19, township 27, range 33, Newton county. The land is owned by the Old Dominion Mining Company of Joplin, which company also operates the mine. Two shafts are on the 80-acre tract, one having a depth of 85 feet and the other being 95 feet deep. The drifts from these shafts are provided with outlets. I inspected this mine on December 7th. I found good timbering in the shafts and good traveling ways around the bottom of the shafts. The steam hoist, including cables, were in good order, and the ventilation in the mine was all that could be desired. The company stores the powder supply in a magazine, 300 feet from either shaft. In my examination of the drifts I found in the roof of the drift from the south shaft, about 30 feet west of the entrance, a space about 20 feet square, which was of a soft soapstone and boulder formation. This material had become loosened by heavy shooting in the stope, and I had this portion of the roof trimmed before I left the ground. (Inspected by Brown.)

Sunrise Mining Company.—This is a copartnership, composed of C. V. Miller, S. H. Miller and F. Myres. The company controls under first lease twenty acres of land, the fee of which is owned by J. W. Allen. The land is located in section 10, township 26, range 33, Newton county. There is one mine on this land being operated by the first lessee. This mine is reached by two shafts 157 feet in depth, which are connected by drift, giving the mine good ventilation. There is one new concentrating plant on this property with a daily capacity of 150 tons. Thirteen miners and six top and mill men are employed at this mine. I made an inspection of this mine on July 13th and found the top structures, hoisting machinery, cables and trap doors in good condition. I also found the timbering in shaft and mine to be secure and in excellent condition. (Inspected by Brown.)

U. G. Wilson Mine.—U. G. Wilson of Joplin controls under sublease and operates twenty acres of land located in section 10, township 26, range 33, Newton county. The land is held under first lease by Adam Scott and others and is owned in fee by the heirs of the McCowen estate in Philadelphia, Pennsylvania. Mr. Wilson has a complete concentrating mill on his sublease with a capacity of 150 tons. There are four air drills operated in the mine, and seventeen miners and eight top and mill men are employed. The mine is entered by a shaft 132 feet in depth. I made an inspection of this mine July 13th and found all top structures in fair condition, and the cables, trap doors and timbering in the shaft in good condition. The drifts were being cut too wide between pillars for the safety of the miners, the drift in one place being nearly 100 feet wide. I called attention to this and instructed the superintendent, Lew Mitchell, to timber the ground cut and to leave pillars every thirty feet in the ground cut in future. The ventilation is only fair, being produced from the surface through the drill holes. (Inspected by Brown.)

JASPER COUNTY.

Allen Mining Company.—This is a copartnership, composed of W. E. Allen, C. F. Brown, Chas. Haney, William Condon and William Gillett. The company holds under sublease, and operates four and a half mining lots in section 9, township 27, range 33, Jasper county. The first lease is held by the Paomo Mining Company, and the land is owned in fee by the Empire Lead and Zinc Company. The mine is reached by a shaft 110 feet in depth. There are two drifts operated at this level, one of which is ten feet high and twelve feet wide, and the other about six feet high and four feet wide. Both drifts are timbered. There is a concentrating mill on the lease with a daily capacity of 100 tons. Four miners and four top men are employed at the mine. I made an inspection of this mine on October 6th and found all top structures, hoisting machinery, cables, cars, tubs and timbering in mine and shaft to be in good condition. The ventilation in the mine was bad. I recommended to the foreman that he connect this mine with the Powers mine, which is about forty feet distant, so as to give the mine natural ventilation and to afford an escape for the miners in case of accident. (Inspected by Brown.)

Amalgamated Zinc and Lead Company.—The land controlled under first lease and operated by this company embraces twenty-three acres owned by the Granby Mining and Smelting Company, and is located in section 4, township 27, range 33, Jasper county. There is one mine on this lease which is operated by two shafts 176 feet deep, with three drifts from these shafts, which are about 55 feet high and 30 feet wide. A 150-ton concentrating mill and four air drills are operated, and eighteen miners and nine top and mill men are employed at this mine. On July 22d I made an inspection of this mine and found all top structures, hoisting machinery, cables, trap doors, tubs and timbering in shafts to be in good condition. I also found the roof well trimmed and the ventilation in the mine to be good. (Inspected by Brown.)

American Zinc, Lead and Smelting Company.—This company owns and controls 360 acres of land near Carterville, and operates four mines, known as the Davey mines Nos. 1, 2, 3 and 4. Four shafts are sunk on the company's land at an average depth of 250 feet. I inspected mines Nos. 2, 3 and 4 on February 23d and found them in first-class condition. Every precaution is taken for the safety and health of the men employed in these mines. The roof is looked after very closely, pillars are now being left where needed, and the best practice is followed in the handling and storage of explosives. The company is now working in sheet ground formation, the ore faces averaging from 15 to 20 feet in height. This kind of ground is generally very dusty from the drilling and heavy shooting, but that is avoided in these mines by wetting down twice a week. The large pumps are connected to the air lines of the different mines, each drill crew sprinkling their particular drift. The four mines on this tract are connected by drifts and are named after the original owner of the land, Thomas N. Davey. Davey No. 1 is not now in operation. On day of inspection 312 men were employed in the mines of this company. Among the recent improvements may be mentioned the installation of shoveling machines in the ground, and the use of mules in the mines to haul the trains of cars from the shovel to the shaft. This is largely an experiment, but so far has proven a success. In addition to the large central magazine on the surface, magazines are provided in the ground at each mine for the storage of explosives taken down for daily use. Only the powder men and bosses have access to these magazines and the indiscriminate use of powder in popping boulders and squibbing, formerly a bad feature at these mines, is thus done away with (Inspected by Wallace.)

Inspection of Mine No. 1, June 12th.—This mine having recently been started up after an extended period of idleness I made inspection of it on the above date. No. 1 mine was opened up some ten years ago by the Missouri Blanket Vein Co. I found many of the drifts cut far too wide between pillars even for the best of roof, while the roof in some parts of No. 1 mine is very loose and slabby.

I found a large slab in the roof southwest of the shaft to be giving down badly and directed that the shovelers be taken from under it, and the slab taken down at once. The men were at once taken out and preparations made to drill some pops in the slab so that it could be shot down. Mr. Elliott, the ground foreman, afterward informed me that he was obliged to take the slab down through five drifts.

At this time I also inspected mines No. 2, 3 and 4, finding them in good condition, with the exception of a few bad places, which were being given careful attention. Roof trimmers are employed at all of the mines operated by this company. (Inspected by Wallace.)

Inspection of Mine No. 1, October 15.—I inspected this mine after the accident in drift No. 4 (see accident reports). The accident was caused by the dropping out of an elliptical slab of roof about 20'x30'x6" to 1' thick. This drift is one of those where the large slab was taken down last June, and it was thought that, after taking down the large slab, a fairly good roof had been secured, but the falling of this slab proved the contrary to be the case. This being so, and the roof in several of the drifts the same as in the one where slab fell. It was my opinion that only the use of timbers would make this mine safe, and I made recommendations accordingly, that drifts in the southeast, south and southwest parts of the mine be timbered with square sets. That holes be drilled in the roof from time to time, to ascertain the formation above, and records kept of same. (Inspected by Wallace)

I again inspected this mine on November 10, 1909, and found that timbers had been placed in good miner-like manner. Pillars being left close and in good form.

Inspection of Mine No. 3, October 19th.—I inspected Davey No. 3 mine on October 19 1909, and found roof in several drifts, from 12 to 17, not in satisfactory condition. However, preparations were being made to put this roof in good shape by takng town slab, trimming and timbering. Recommended that a square set be placed in drift No. 16; another square set near the shaft, between second row of pillars north; posts and cap under edge of slab in drift No. 15, and roof trimmed in No. 12.

Roof is now being raised about 4′ in headings of drifts 12 and 18, just ahead of pillars that are being turned. I believe this will result in better cap rock. (Inspected by Wallace.)

Inspection of Mines Nos. 1, 2 and 3, November 17th.—I inspected Davey mines Nos. 1, 2 and 3 on November 17, 1909, and found conditions much improved. Drifts showing bad roof being trimmed or timbered as fast as possible. Spotted location of two more square sets in No. 3 mine, drifts 14 and 15.

I am sorry to note that the use of water in the air lines for the purpose of sprinkling the mines, and thus laying the dust, has been discontinued at the Davey mines, it being claimed that the men did not take kindly to the plan. I am sure that the large amount of flint dust in the air of our dry sheet ground mines is the principal cause of miners' consumption, and I would like to see a law enacted compelling the installation and use of an effective sprinkling device in all such mines. (Inspected by Wallace.)

Inspection of Mine No. 1, December 1st.—I again inspected this mine on the above date and found that timbers were still being used. Some very soft roof had been encountered in the southeast drifts and in one drift—No. 7—the roof had caved between the timbers and the face. I directed that no more work be done in this drift and that it be cut around. It being very hard to hold timbers when set so close to the faces, I recommended that all the square sets close in be collar-braced and heel-braced, so that the posts would not be so apt to be shot out. It appears to me that the ground is being very well handled considering the formation to be dealt with. (Inspected by Wallace.)

The American Beauty Mining Co. is operating on ten acres held under first lease from the Underwriters Land Co., in 6-28-32, Jasper county. I inspected this mine on April 21st. There is one shaft in operation, but the mine has connection with the Golden Glow mine, which furnishes proper circulation of air and also an escapement. There is a concentrating plant on the property having a capacity of 200 tons per ten hours. Thirty-five miners and ten top and mill men are employed. I found the mine and equipment in good condition, with exception of a slab in the north drift, which I ordered taken down at once. (Inspected by Wallace.)

Second Inspection.—I again inspected this mine on November 18, 1909, and found two slabs which I considered should be taken down. I gave instructions to that effect and the superintendent agreed to have the work done at once. Otherwise the working places were safe and conditions satisfactory. They propose to enter the east drifts in the near future and, after looking these drifts over, I warned them that there was some loose roof there (specifying the points where located) which must be trimmed down before allowing the men to enter to work. (Inspected by Wallace.)

Annalinda Mining Company; date of inspection, October 26th.—This company is operating on 9 acres of land in 8-29-32, Jasper county, owned in fee by the Reliance Mining Co. This lease includes the land formerly operated by the Durby-Bryant and Express Mining Companies. One shaft, 212′ deep, is operated, but there is an air shaft and the mine also has connection with the Square Deal mine. Two drills are operated at present and 11 miners and 7 top and mill men employed. The drifts in the Annalinda mine proper were in fair condition, but some of the old drifts in the Express ground were caved in and others were in dangerous condition and in parts of the Durby-Bryant ground the drifts were down. I gave instructions that the drifts in the Annalinda mine proper, where work is to be resumed, be given a thorough trimming and that an extension ladder be furnished for use in this work; that no work be done in the dangerous drifts of the express ground unless the drifts be first thrown and then small drifts be driven in under the floor and the caved dirt pulled through pull holes. A small runway drift is now being driven to open up a stope under the old Durby-Bryant ground. (Inspected by Wallace.)

Arkansas Mine.—This mine is operated by a copartnership under the firm name E. F. McDonald and Company. The mine is located in the Prosperity district, one and a half miles south of Carterville, in section 28, township 28, range 32, Jasper county. The land is owned by S. E. and H. E. Carter, and is leased to D. J. Young and the St. Paul Mining Company, the first lessees subleasing to McDonald and Company. There are two shafts 200 feet deep on the tract, but only one is in operation. The shaft timbers are fairly good, and the hoisting machinery and cables are in good condition. Ventilation in the mine is good, the drifts connecting with the Lucky Budge mine on the north and the George H. mine on the east. This mine had never been a paying investment up to the time it was leased to the present operating company, who took over the property on May 11, 1908, making their first turn in of ore on May 23, 1908. They pay a large royalty to the landowners and to the first lessees, and in spite of that, have paid good dividends from the start, even during periods of low prices, a condition seldom encountered in the operation of sheet ground mines. This company operates under the contract system. All the ground work is contracted to John F. Wingfield and J. F. Foster, practical men with many years of experience, and to these contractors, in large measure, is due the successful operation of the mine under such high royalties. The mine is in first-class condition, with the exception of the powder being kept in the ground. I ordered the operators to immediately build a magazine on the surface for the storage of powder. This they promised to do. There are six faces of ore in this mine, averaging from 12 to 15 feet high. On day of inspection, February 22d, twenty miners and eight top and mill men were at work

I inspected this mine again on May 25th and found that my recommendation as to erection of a powder magazine on surface had been complied with. Found the mine in good condition with the exception of a slab in the roof east of the shaft and near the line of the George H. mine. Mr. Wilson, the ground foreman, and the machine men in this drift had tried to pull the slab down with pinch bars, but were unable to do so. Mr. Wilson assured me that he would shoot the slab down that night. On the following day I was notified that the slab was down.

On August 25th I again inspected this mine and had the following recommendations to make: That hand rails be placed at the top of shaft; that copper or brass points be used in the ends of tamping bars, instead of wire nails; repairs to cribbing in shaft.

I visited the mine November 4th, and found that the recommendations made on August 25th had been complied with.

On December 22d I found the mine in good condition with exception of some trimming needed in two of the northeast drifts.

Athletic Mining Co.—This company is operating on a 40-acre lease of the Newell-Morse land in 12-28-33, Jasper county. There is one mine on the lease equipped with a fine large concentrating plant. Access to the mine is had by means of two shafts 225 feet in depth. Eight drills are operated and 35 miners and 15 top and mill men employed. This company has only recently secured control of this mine, which was formerly owned and operated by the Siegfried Mining Co. I inspected this mine on September 25th, and found the top structures, hoists and cables in good condition, but the same cannot be said of the mine. The roof was very rough and there were many loose slabs, the largest one being at the south shaft. The air in the mine was very close, there being little circulation, but I am sure that this is due to the fact that the pump lines are in the mill shaft, which is naturally a down draft shaft. As soon as the pumps are moved to the other shaft I am confident that there will be a good circulation of air in the mine. I gave directions that the mine be thoroughly trimmed and put in good condition.

I visited this mine on September 30th, and found that much trimming had been done, but the mine was not yet in satisfactory condition. I directed that trimming be continued and also that loose rock be cleaned from offset in the mill shaft, and that a suitable approach be built at the top of the shaft.

I again inspected this mine on November 13th, and found conditions much improved. Roof has been, and is now being, trimmed and rock has been cleaned from offset in mill shaft and approach built. Recommended that copper points be furnished to the powder man for use in the ends of tamping bars, in place of the wire nails now used; that primers be kept separate from the powder, and that a safe place be made for storage of powder taken into the ground daily by cutting a small drift into a pillar or the wall. I was led to make the latter recommendation by seeing some five or six boxes of powder piled beside a pillar and lying in direct line with a round of holes which were to be squibbed. (Inspected by Wallace.)

Ave Maria Mining Co. owns a first lease on 40 acres of the Brazneal et al. land in section 19, township 28, range 32, Jasper county. There is one mine on the lease which is entered through two shafts 245 feet deep. I inspected this mine on April 17th. The mine has been nicely opened up, the shafts having been connected so as to give a good circulation of air before extensive operations were begun, and the pillars are set close and in good form. I found the top structures and hoisting equipment in very good condition, everything being new and up-to-date. The mill is driven by a gas engine. Forty to fifty miners and fifteen top and mill men are employed. (Inspected by Wallace.)

Second Inspection. I again inspected this mine on September 3, 1909, and found conditions good. A new turbine pump has been installed at the south shaft to handle the water in the mine and is giving very satisfactory results both as to economy of operation and efficiency. This pump is driven by a gas engine. (Inspected by Wallace.)

Avondale Nos. 1 and 2.—These mines are operated by the Elizabeth Mining Company, sublessees of the Avondale Mining Company, controlling three and a half acres on the J. W. and B. C. Aylor land, located in section 21, township 28, range 32 in the Webb City mining camp. The Avondale mines are conneced by drift and have outlets to the Dominion mine. I made an examination of these mines on April 15 1909, and while conditions were not satisfactory I did not consider I would be justified in condemning the mines. The formation in these mines is principally a cemented conglomorate, which stands better than would be supposed at first sight. The ore bodies here were very large and the drifts are consequently very high and a very small rock falling from the roof or high up on the walls would kill a man if it struck him on the head. Constant trimming and watchfulness is the price of safety in such mines and I warned the operators that they must take every precaution. Long trimming ladders were a part of the equipment at these mines. The formation around the bottom of No. 2 shaft is very loose and brecciated and is bound to air slack and fall if not very carefully trimmed. I directed that the roof and the sides of pillars here be given especial attention. I made a thorough examination of these mines again on November 20th, and the defects found on date of this inspection are set out in the following notice served on the operators, with the request to correct same: "Following inspection of your mines, I have the following directions to give: I notice that in the large drift in mine No. 1, opening out south of the shaft, the roof has fallen out or been taken down until in places a formation has been exposed which Mr. Zimmerman assures me is limestone—he having examined same from a ladder—and that between the flint remaining in the roof and the limestone there is a layer of soapstone. That being the case, I consider the drift to be dangerous, and I direct that no men be allowed to work under said roof until the flint remaining in the roof has been taken off up to the lime and the drift trimmed. I further direct that you take down the loose "bag" in the arch of the drift just west of No. 1 shaft and near the line between the No. 1 and the Dominion mine. The roof of drifts and sides of pillars near No. 2 shaft show a very loose brecciated formation, very dangerous unless constantly watched and trimmed. This I charge you to do. In my opinion, the ground in these two mines has about all the weight it will stand, and I hereby notify you not to take out any more pillars." (Inspected by Wallace.)

Bachelor Mining Company. — This is a copartnership, composed of Charles Kennedy, H. L. Ross, H. Gentle and Ed. Rankin. Mr. Rankin of Webb City is manager for the company. The company is operating under a sublease from the Cowhead Mining Company on five acres of land owned by the Continental Lead and Zinc Company and located in section 9, township 27, range 33, Jasper county. The mine is reached by a shaft 185 feet deep. The ground is of the sheet formation, the upper levels having been mined out by previous operations. The company has a concentrating mill on its lease with a daily capacity of 100 tons. Eight miners and six top and mill men were employed on date of inspection. I made an examination of this mine on October 15th and found the hoisting machinery to be in a very worn and unsafe condition. The cable hook was also unsafe, there being no latch-spring in it; this allowed the hook to stand open. I called the attention of the superintendent to these conditions and instructed him to repair the worn out parts of the hoister. I had the hook repaired before I descended into the ground. I found that the upper and lower level had been cut together in one place, which made it about 100 feet to the roof. It was impossible for me to make an inspection of this roof, so I recommended to the superintendent that he remove the tracks from this point to the other side of the pillar. The ventilation in the mine was good. (Inspected by Brown.)

Battin and Company.—This is a copartnership composed of W. H. Battin and F. Cox, both of Carl Junction. The ten-acre tract upon which this company is operating is owned by the Excelsior Zinc and Lead Company. One shaft has been sunk at a depth of 110 feet and opens to one side only, drifting having just commenced. The ground being soft, timbering is done with 14-foot posts and 12-foot caps. Another shaft will be started soon to connect with the drift now being driven. When this shaft is completed the mine will have a better circulation of air and a large force of men will be employed. On date of inspection, July 28th, I made a careful examination and found everything in and about the mine in satisfactory condition. (Inspected by Wallace.)

Beasely Mine.—On April 10th and 12th I made an inspection of the Beasely mine, located on the Center Creek Mining Company land, in section 18, township 28, range 32, Jasper county. This property is owned by the Center Creek Mining Company, but is operated by a copartnership composed of J. S. Tharp, J. A. Fritts and Richard Taylor, all of Webb City, who hold a lease upon mining lots numbered 82, 83, 109 and 110. There are several shafts on these lots, but only two are in operation. For several years the large drift on lot No. 109, immediately southeast of the mill, has been in a notoriously dangerous condition, and to my personal knowledge, one man was killed there by falling boulders. In shape, this drift resembles a large jug slightly flattened on one (the west) side, being, I should judge, about 100 feet deep from the surface. At the apex the roof has caved out to the surface, leaving an opening some 50 feet in diameter, through which the daylight streams, lighting up the entire drift and exposing the dangerous slabs and boulders hanging in the roof and sides. At the time of my inspection four men were working in this drift, one pair of facemen or cutters and two shovelers. The shovelers quit work and went out while I was there on account of the frequent falls of material from the edge of the break of the roof. It was raining at the time inspection was made and these falls were caused by the water looseing up the piles of riprap at the edge of the cave-in. The cutters were at work in a comparatively safe place driving a drift in the west wall. The shovelers were in danger from the fact that the tracks over which the dirt is conveyed to the shaft run directly through the large drift and under the edges of the break in the roof. I warned Mr. Fritts, the superintendent, of the dangerous condition of this drift, and that as the tracks were laid it was an unfit place in which to work men. I recommended that a runway be driven in the wall of the large drift, from a point near the shaft to the small drift in which work was being done, in order that the men might have a safe passageway to and from the shaft. I notified him that unless this improvement was made I would be forced to stop any further work in this drift, and I also notified him that no work must be done in any other part of the large drift except in the west wall, as above mentioned. He promised to make this improvement at once. The other work on this property is being carried on in the large open cave-in northeast of the mill, removing the caved-in material. The men were working under an overhanging wall, formerly the side of the drift, and I noticed that this wall needed trimming, several slabs being in evidence. I gave instructions that this wall be trimmed and made safe for men to work under. There were six men at work in this part of the ground. Upon leaving I requested Mr. Fritts to notify me when my instructions had been carried out and the improvements made. On April 20th I received a letter from him in which he stated that my requests had been complied with.

I visited this mine on September 4th, October 11th and November 2d, and at each visit made recommendations for more care in trimming, but as the operators were doing the work themselves I had no means to enforce my requests.

The inspection on November 2 was made in company with Mr. McCroskey, manager of the Center Creek Mining Co., to look at two holes which had been drilled in an arch on the east side, near the right of way of the Missouri Pacific Railroad Co., and about which the railroad inspectors had complained—saying that if the holes were shot it would weaken the ground to such an extent that it might cave in under the tracks. Upon looking at the holes—which were some 12 feet deep—I gave it as my opinion that while it might not cave the ground to shoot the holes it undoubtedly would weaken it greatly, and might cause trouble in the future, and that the holes had better be left unshot. This was also Mr. McCroskey's opinion and he accordingly gave orders that the holes be not shot. (Inspected by Wallace.)

Big Casino Mining Company.—This is a copartnership composed of C. Emmerich, H. Conley, W. Tittus and H. Pratt, all of Joplin. The company has a small mine on a ten-acre lease, the land being owned in fee by A. B. McConnell of Joplin, and is located in section 7, township 27, range 32, Jasper county. The mine is reached by a shaft 106 feet in depth. There are two small drifts from this shaft which measure about 10 by 12 by 30 feet. The machinery consists of one boiler, two hand jigs, one steam hoister, one pump and one steam drill. I made an inspection of this mine on August 25th and found the top structures, hoisting machinery, cables, top car, tubs and timbering in shaft and in mine to be in good and safe condition. Ventilation is bad, it being produced by a 28-inch fan, but a drift is being driven to connect this mine to an air shaft which will greatly improve this condition. (Inspected by Brown.)

Big Three Mining Company.—This company controls, under sublease, and operates five acres of land located in the northeast quarter of the northwest quarter of section 16, township 27, range 33, Jasper county. The first lessee is the Marion B. Mining Company, and the land is owned by the Henderson estate, of which George A. Graves of Joplin is trustee. There is a concentrating mill on this property with a daily capacity of 150 tons. The Big Three Mining Company recently subleased this mine and the mining machinery for a period of six months, from the first of September, to a company of miners composed of G. O. and B. Pearson and others. The mine is reached by a shaft 146 feet deep. The drifts from this shaft have all caved in or have been shot in with one exception, a drift 30 feet high and 40 feet wide. I made an inspection of the mine on August 9th and found the hoisting machinery, cables, trap doors and tubs in good order. The timbering in the shaft was good and ventilation in the mine was sufficient. The one drift now worked by this company of miners is near or beneath a public highway, so I notified them not to do any heavy blasting in this drift. (Inspected by Brown.)

Bird Dog Mine No. 1.—This mine is operated by the Bird Dog Mining Company, first-lessees of the Bradford and Kansas City Zinc Company. The operators control, under lease, six acres in section 17, township 28, range 32, Jasper county. The two shafts on the lease, each 140 feet deep, are connected by drifts. The faces are from 8 to 10 feet high. I inspected this mine on March 13, 1909, and found the top structures and hoisting equipment in excellent condition. The mine was also in good condition considering the formation to be dealt with. There is some very soft and rotten roof in this mine. The principal channel of this soft roof, which is about 50 feet wide, seems to be an old watercourse and extends across the ground from northwest to southeast. It would be the source of much trouble and danger if it were not carefully handled. Pillars are left close together in this ground and in many places posts are also placed as additional support. There is undoubtedly a stope here similar to that now being taken up at the Dinger and Disbrow mines adjoining, and it is proposed to commence taking up this stope in the near future. I anticipate that trouble will be experienced in taking up this stope on account of the pillars having been left very small and on account of the bad roof spoken of above. Great care will have to be used to prevent these pillars from being shattered or knocked down entirely. One man is employed to trim roof. (Inspected by Wallace.)

I again inspected his mine on October 1, 1909, and found that my fears of trouble being experienced in taking up stope at this mine had been well grounded. Some of the pillars had been shattered and at least one had been knocked down. The pillar knocked down was near the east shaft. A heavy slab had also come down in this drift—probably when the pillar was knocked down. The edges of this slab had been driven back until fairly well caught between the surrounding pillars, but it seemed so heavy that I did not like the looks of it, even though it seemed perfectly tight, and directed that the layby be moved over to the other side of the drift. Recommended that closer attention be paid to trimming, and to turning the pillars with the stope; that stope be not taken up under the worst places in the roof, but that such places be cut around. These places were pointed out to Mr. Strong, the ground foreman. I also directed that some repairs be made to lacing of the well hole in the derrick. (Inspected by Wallace.)

Blake Mining Company.—This company is a sublessee of the Hero Mining Company. The company controls 40 acres of land in section 7, township 27, range 33, Jasper county. The land is owned by the Connor Realty Company of Joplin. The mine is entered by a shaft 200 feet deep and has four drifts from this shaft, with an average height of 8 feet. The width between the pillars is from 30 to 60 feet. A concentrating mill, owned by the operators, is on the property and has a daily capacity of 150 tons. At time of inspection twenty-five miners and nine top and mill men were employed. I made an inspection of this mine on September 17th, and I found everything in satisfactory condition, except that a few loose slabs were found in the roof. They were left, I was told, by the former operators, and the present operators assured me that they would be taken down before the miners would be allowed to enter the drift. Ventilation in the mine is produced by a 42-inch fan and is not satisfactory. A drift is being driven to connect these workings with an air shaft, and when completed will, no doubt, greatly improve the air. (Inspected by Brown.)

Blackberry Mining Co.—This company owns a first lease on 14½ mining lots of the Granby M. & S. Co. land near Joplin, Mo. There are three shafts 150 feet deep in operation on the lease, the ore being concentrated on a plant of 150 tons capacity. The property is now operated under lease by D. V. Scholl and F. McCammon. Four drills are operated and 20 miners and 9 top and mill men employed.

I made an inspection of this mine, in company with Inspector Brown, on July 19th. We found the top structures, hoists and cables in good condition, but underground conditions were not so satisfactory. The mine has been operated for some time and the drifts are high and in some places wide. The work being done seemed principally in the nature of a clean up of the mine. In one place work was being done on a leg between two drifts and we gave instructions that, if further work was to be done in either of these drifts, no more work must be done on the leg. We also found the men using tamping bars made of gas pipe with wooden plugs in the ends. Gave orders that only tamping bars made entirely of wood must be used. (Inspected by Wallace and Brown.)

Blizzard & Co.—On July 19th Mr. Brown and I also visited a small mine operated by Blizzard & Co. on the Colorado land, south of Joplin. This is a very small mine—only four or five men working underground and the ore cleaned on hand jigs. At time of inspection all of the men working in the mine (it might better be called a prospect) were interested in the lease. The shaft is 80 feet deep and there are two drifts leading from same, one north and the other south. Ore hoisted with a horse hoister. I went down and examined the drifts and found them in safe condition. The cable was very small—hardly ¼ inch in diameter—and there were many broken wires. It was also very rusty and I was almost afraid to take a chance on it, going down and coming out. We recommended that they put on a new cable at once, but, as they are doing the work themselves and are taking their own chances, they will probably do as they please as to purchasing a new cable. (Inspected by Wallace and Brown.)

Bohemian Girl Mine.—This mine is operated by the Bohemian Girl Mining Company of Webb City, under first lease from the Kelly heirs. The operators control ten acres in section 18, township 28, range 32, Jasper county. There are two shafts on the land, one 160 feet deep and the other 175 feet deep. The mine is just being opened up and very little drifting has been done so far. Sheet ground has been encountered in both shafts, but the drifts now being worked are above the sheet ground at 160 feet level from the southeast shaft, which is the only shaft operated at present. I made a careful examination of the mine on December 18th and found everything in and about the mine in satisfactory condition except the storage of powder. The following written notice was served on the operators: "In the absence of a magazine for the proper storage of powder, you are keeping too large a quantity of explosives at your mine, there being seven boxes around the blacksmith shop at time of inspection. Your superintendent, Mr. Harnisch, tells me that you intend erecting a large mill on this property in the near future, and at the same time a suitable powder magazine. This being the case, and it being evident that very little powder is needed in the soft ground now being worked, I recommend that you return all surplus stock to dealers, keeping only enough on hand for immediate use." I received notice from the operators that my recommendations had been adopted. On date of examination six miners and nine top and mill men were employed. (Inspected by Wallace.)

Brown Mining Company.—This company holds the first lease and operates four mining lots. The land is owned in fee by the Continental Zinc Company and is located in section 9, township 27, range 33, Jasper county. The operators have a contract with John Graham to mine the dirt and place it in the mill for half the profits, the dirt to be milled by the Brown Mining Company. The mine is reached by a shaft 135 feet in depth. The drifts recently caved in and the men are now at work cleaning out the caved dirt and retimbering the drifts. They expect to reach the ore faces in about three weeks. On date of inspection, October 22d, I found all top structures, hoisting machinery, cables, trap doors and timbering in mine and shaft in good condition. Ventilation in the mine was good. At time of inspection three miners and two top men were at work. (Inspected by Brown.)

Bull Dog Mining Company.—This company is operating on a ten acre lease of the Rochester L. & L. Co. land in 6-28-32, Jasper county. There is a large concentrating plant on the lease and the mine is entered by three shafts 185 feet, 185 feet and 165 feet in depth. The shafts are connected by drift and the ventilation is good. Five drills are operated, 35 miners and 20 top and mill men employed. Sheet ground is being mined, and this mine, like so many other mines in the sheet ground formation, was opened up by making a first cutting with faces about 8 feet high. The difficulty in breaking a sufficient tonnage of ore from these low faces caused them to leave some of the pillars small and wide apart. The disadvantage of this is apparent now that stope is being taken up. The foreman, Mr. Burton, seems to be handling the ground well. I recommended that in future cuttings the pillars be left closer; that more posts be placed on top of the stope supporting the roof at the edge of the lead ground, and that more attention be paid to keeping the mine clear of loose powder and primers. The hoists and cables are in good condition.

This mine, being connected with old drifts in the bottoms of Center Creek, known as Center Valley, was formerly greatly troubled by being flooded with water every time Center Creek overflowed. This trouble has been stopped by closing the connecting drift with a cement dam, the drift where the dam is built being only about 25 feet or 30 feet wide and 7 feet or 8 feet high.

The dam was built according to specifications furnished by a competent firm of engineers and is very thick and strong. It is built into the solid rock of the top, bottom and sides and is reinforced by six abutments. Large waste pipes, fitted with valves, are built into the bottom so that the water can be released as fast as the pumps can take care of it and so kept from rising too high behind the dam. The dam is also fitted with a gauge showing the pressure. At time of inspection the gauge registered 10 lbs., which would indicate that the height of the water behind the dam was about 20 feet. The factor of safety of the dam being much greater than any strain likely to be put upon it, I consider it safe.

Second Inspection. On October 8th I again visited this mine and found ground around the west shaft being opened up in good shape. Stope was still being taken up in the other parts of the mine, stope having been driven up to the headings in only a few drifts. There was some bad roof ahead of the stope in several places and I gave notice that the roof ahead of the stope must be carefully watched and trimmed, taking down all loose slabs. I also directed that the broken edge, caused by the fall of a large slab in the mill shaft ground, be timbered. (Inspected by Wallace.)

Bull Frog Mining Co.—This company owns a lease on 45 acres of land owned in fee by Mattes Bros. of Joplin, Mo., in 4-27-33, Jasper county. There is one mine on the lease entered by two shafts 175 feet deep. The ore is concentrated on a mill of 200 tons daily capacity. At Mr. Brown's request, I assisted him in an inspection of this mine on July 21st. We found the top structures, hoists and cables in good condition, but did not find the mine in such good shape Some very large ore bodies have been worked at this mine and the drifts are very high. The west drift from the west shaft is also wide. In this drift a seam of soapstone about 6 feet or 7 feet thick has been encountered in the roof, running back toward the shaft and raising at an angle of about 30 degrees. The drift is not so wide at this point—the soapstone showing between a large pillar and the wall. Sufficient hard roof had been left under this soapstone to protect the drift back toward the shaft, and beyond where the seam appeared the drift has been raised to a hard flint and lime roof, leaving the ledge of flint with the soapstone above it. The danger here being from chunks of soapstone slacking loose and rolling over the edge of the ledge of flint to fall some 60 feet to the tracks below. After examining this place, which was no easy job as we had to climb some 70 feet up the pillar by aid of a steel cable, both pillar and cable being coated with wet soapstone which had run down from the ledge, we directed that hitches be cut in the flint of the ledge and in the roof, heavy posts set in these hitches and then lagging of heavy poles be placed behind the posts. This lagging to be carried up to the roof so that no soapstone could possibly roll out. There is enough loose soapstone now on the ledge for filling behind the lagging, and if there is some space left it will quickly fill up, as soapstone swells when it slacks. In another part of the mine, south of the mill shaft, the floor between the upper and lower levels had been taken out, making a hole through to the drift about 90 feet below. A part of one side of the original drift on the upper level is a soapstone formation, and the roof of this old drift looks none too firm. There were fresh evidences of falls having occurred at this point, so we gave instructions that the tracks be moved from under this hole and the men kept away from that part of the drift below. These recommendations were readily agreed to by the foreman, Mr. John West. (Inspected by Brown and Wallace.)

Cadwell-Allen Mining Co.—This company is operating on 12½ acres of the Criterion lease of the Unex Land and Zinc Co. land, in 34-28-32, Jasper county. There is a 200 ton concentrating plant on the property. Two shafts, 190 feet deep, provide access and ventilation to the mine. Three drills are operated and 21 miners and 10 top and mill men employed. At time of inspection, August 12th, the mine was just being opened up, the air drift between the two shafts having recently been completed. The hoists and cables were in good condition and, considering the formation, the mine was also in good condition. The roof is a soft cottonrock, full of sand holes, which is very liable to air slack and come loose. I gave instructions that the drifts be cut narrow and that allowance be made for the nature of the ground in leaving pillars—leaving them large. To cut wide in this ground would certainly ruin the mine. (Inspected by Wallace.)

Cameron Mine No. 1.—The following are the officers of the company operating this mine: F. K. Cameron, president and treasurer; A. A. Cameron, vice-president and secretary; D. W. Cameron, assistant secretary, and J. M. Osenbaugh, manager. The company has offices at 818 Main street, Joplin. The 50 acres of land owned by the company are located in section 16, township 27, range 32, Jasper county. On this land the company operates the Cameron mine, which is reached by a shaft 125 feet deep, with two drifts from the shaft with an average height of 9 feet and an average width of 18 feet. There is also a concentrating mill on this property with a daily capacity of 100 tons. On date of inspection eleven miners and five top and mill men were employed. I made an inspection of this mine on July 30th and found the hoisting machinery, cables, trap doors, tubs and timbering in mine and shaft in good condtion. Ventilation was not satisfactory and I directed that a new shaft be sunk at once. (Inspected by Brown.)

Cameron Mine No. 2.—This mine is operated by the same company operating the Cameron Mine No. 1. Mine No. 2 is located about two and a half miles southwest of Sarcoxie, where the Cameron Mining Company owns a first lease on twenty acres of land in section 12, township 27, range 30, Jasper county, owned in fee by J. W. Boyd of Sarcoxie. This is a comparatively new mine, the mill having been started about April 1, 1909. The mill and equipment are A No. 1 in every respect, the mill being of 300-ton daily capacity. On July 31st and August 2d I made a thorough inspection of this mine and have to report as follows: The mine is entered through one shaft 190 feet deep and the ore is broken from faces about 30 to 35 feet high. Five air drills are operated and twenty miners are employed on the day shift, ten miners on the night shift and twelve top and mill men. I found a crack in the friction band of the hoist and directed that a new band be put on at once; otherwise the hoist was in very good condition; cable, trap door and timbering in the shaft all in good shape. The ground being hard, no timbers are used in same. In my opinion the drifts in this mine have been started out at too high a level, causing the roof to be left in strata of white and yellow flint, cut by many natural seams and pockets, which is very difficult to keep properly trimmed. I suggested that the roof be dropped down several feet, leaving same in strata of dark flint, which appeared to be much harder and stronger. In making this drop I advised that pillars be left in the center of every drift—the drifts were ready for pillars anyway—the drop made straight down and very narrow drifts cut on each side of the pillars, widening out after the pillars had been turned. I found a loose slab in the roof of the northeast drift and instructed Mr. Osborne, the ground foreman, to have it taken down at once. I also recommended the purchase of a light two-piece extension ladder for use in trimming and inspecting the roof and sides of the drifts. The mine being entered through only one shaft, I requested that work be pushed with all possible speed in making connection between the workings from the mill shaft and another shaft on the lease, which is not at present in operation. (Inspected by Wallace.)

Carbondale Mine, operated by the Carbondale Mining and Milling Company, is located in section 7, township 28, range 30, north of Webb City. The land is owned by Albert T. Keily and the first lease is held by the H. B. Mining Company, this company subleasing the tract to the Carbondale Mining and Milling Company. The mine is entered by a shaft 200 feet deep. I inspected the mine on March 16th and found both mine and equipment in first-class condition, with exception of shaft timbering which was rather light and poorly set. This is one of the few mines in the district using cages and a direct geared, linked-motioned hoist. There is a fine large mill on the property, suitable for handling the sheet ground ores that are being mined. Mr. George R. Farmer of Carbondale Ill., is the manager. The powder is stored in a magazine on top, and only enough for one day's supply is taken underground. On date of inspection six air drills were in operation and thirty miners and twelve top and mill men were at work. (Inspected by Wallace.)

On September 26th I returned to make another inspection of this mine, selecting Sunday on which to do the work because no ore was being hoisted and I could have all the time I wished in which to examine the shaft timbering and cages without causing the operators unnecessary expense and delay. I found the shaft timbering in a very dangerous condition and ordered repairs to be made at once before operation of the mine should again be resumed. I also noticed that quite a bit of loose rock had accumulated around the collar of the shaft and there was danger that it would roll into the shaft. I ordered this rock cleaned away and that it be kept cleaned away, and that if rock was spilled from the dump at top of head frame that repairs be made to said dump so that rock would not be spilled back when dumping the cages. The mine was in good condition with exception of some drifts having been cut too wide at a place where they had shot into the roof, thinking that they were not high enough with their drifts. This will cause a slab which will have to be carried to the face and caught on pillars, and carried to each side until it can be caught between pillars by the aid of timbers. I notified them to do this, and in future cutting of the ground that pillars must be left closer. The cap rock in this mine is excellent if not tampered with. Following is the notice given to this company in regard to repairs to the shaft timbering. (Inspected by Wallace.)

September 27, 1909.

Carbondale Mining Company, Webb City, Missouri.

Gentlemen:—Upon inspection yesterday of your cages, guides and shaft timbering I found the following defects which must be remedied at once:

The head blocks and top and bottom shoes on the cages are badly worn, allowing the cages far too much play on the guides. This play of the cages on the guides—endwise and sidewise—has caused the latter to become loosened from the buntons and has also loosened many of the buntons. Some of the buntons have been cut almost in two by the sharp edges of the shoes—the worn head blocks allowing endwise play of the cages to that extent, especially on the north side of the shaft. From about forty feet below the collar of the shaft on down to the bottom no attempt has been made to frame the timbering, the buntons being simply let into hitches cut in the rock and wedged in place, no posts or wall plates being used. The whole fabric is in a dangerous condition and if either of the cages should jam with men on, someone would likely be killed.

The cages should be placed in good condition by the replacing of blocks and shoes and the addition of **new safety catches**; the timbering now in the shaft should be removed and replaced by framed timbering and the guides replaced by new ones of white oak, at least 4 inches x 6 inches in size.

In this connection, and in the line of a suggestion, I will add that, in my opinion, it would lessen operating costs and greatly facilitate the operation cf your mine, if, while making the betterments above mentioned, you would make provision for the installation of skips having capacity of say 3,000 pounds, or about three times as great as that of the cars now being hoisted on the cages. This would lessen the number of trips and at the same time increase the hoisting capacity of the plant.

Kindly notify me when the cages and shaft timbering have been placed in good condition.

On Ocober 7th, 1909, I visited this mine and found that the shaft was being re-timbered as per my instructions—oak guides being used. (Inspected by Wallace.)

Carnation Mining Co.—This company is operating on forty acres of land, in 28-28-32 Jasper County, owned in fee by Mrs. A. P. Cosgrove, and the first lease is owned by Frank Strohm. I inspected this mine on August 24th. A large concentrating plant has recently been completed and the mine is being opened up so that a sufficient tonnage of ore can be secured. There are three shafts on the lease, 206 feet, 209 feet and 240 feet deep. Two of the shafts are connected by an air drift on the 209 foot level and an air drift is now being driven to connect them on the 228 foot level. The other shaft, on the north, will also be connected later. Three air drills are operated and ten miners and 5 top and mill men employed at present, but this force will be increased as the mine is opened up. The mine and equipment are in good condition. The roof on the 228 foot level, where work is being done, is not good and will require careful handling. I cautioned the superintendent and ground foreman as to the nature of the roof and that they must not cut the drifts wide. A single cage is used in the mill shaft and a large hopper is being constructed in the ground. (Inspected by Wallace.)

Carmean-Squires Mining Co.—The Whitsett mine and ten acre lease, adjoining the Alabama lease on the south, is now operated by the Carmean-Squires Mining Co. I visited this mine on May 7th. The mining machinery, hoists etc. are driven by electric power and the concentrating plant is of large capacity and recent design. There is one double compartment shaft on the lease. This shaft is 200 feet deep and is of the same size as the one at the Alabama mine. The hoists, cables and shafts are in good condition. The ventilation of this mine and the Alabama mine is excellent. In addition to the natural ventilation furnished by the two shafts, a large fan has been installed over a shaft on the swayback lease, adjoining. The fan house has been constructed over the shaft and the fan is now being operated as an exhaust, but by simply changing two doors it can be operated as a blower. The fan is driven by an electric motor. The roof in the north part of the mine is of much the same character as the roof of the Alabama—rough and inclined to air slack. In the south and west drifts the roof is harder and this fact has been taken advantage of to cut the drifts too wide.

The defects noted were the wide drifts in the south and west part of the mine and the fact that explosives are being stored underground—as many as forty 50 lb. boxes being taken down at a time. I had the powder removed from the mine and directed that it be stored in a magazine on the surface. I also gave instructions that pillars be left closer in the south drifts. Seven drills are operated and forty miners and ten top and mill men are employed. (Inspected by Wallace.)

Second Inspection. I again inspected this mine on August 27th, and found that as a natural result of the wide cutting of the ground in the south and west drifts, slabs had developed in the roof. Men were at work taking down slab and trimming. I noticed one very heavy slab in south drift which was giving down. This slab was directly over a track and I gave orders that no men be allowed to work in that drift until the slab had been taken down.

A new foreman, Mr. Ed. Jennings, has taken charge of this mine and the Alabama mine In the latest cuttings pillars are being left closer. (Inspected by Wallace.)

Carmean-Squires No. 2 (Alabama).—This mine and ten acre lease in 34-28-32 is now controlled under lease and operated by the Carmean-Squires Mining Co. There is a fine large concentrating plant on the property and the equipment is very good.

The mine is entered through one double compartment shaft 200 feet deep and the ore is raised by electric hoists—one hoist over each compartment of the shaft. In addition there is connection with the Whitsett mine, operated by the same company.

On date of inspection, May 7th, I find the hoisting machinery and shafts in good condition and the mine in fairly good condition, but in need of trimming. The pillars are not wide apart in this mine but the roof is very rough and is inclined to air slack and come loose. I gave instructions that this trimming be done at once and the mine placed in good condition. Eight drills are operated, forty miners and ten top and mill men employed. Ventilation very good. (Inspected by Wallace.)

Second Inspection. On August 27th, I again inspected this mine and found it again in need of trimming. I notified the management of this neglect and informed them that the mine **must** be kept trimmed. The ground foreman promised to give the mine a thorough overhauling on Sunday the 29th. I met him some days later and he informed me that this had been done. (Inspected by Wallace.)

Note. During the latter part of 1909 this mine was operated under lease by I. C. Hess & Co.

Church-Mitchell Mining Co.—This company is operating on 80 acres of land held under first lease from the Acme L. & Z. Mining Co. (40) and C. H. Baker (40), in 33-28-32 Jasper County. I made an inspection of this mine April 21st. There are two shafts, 215 feet deep, connected by drift, but at present operations are confined to the east shaft, the other one being used as a pump shaft. Thirty miners and ten top and mill men are employed. The drifting is now in an easterly direction and the head of the drifts are so far from the shaft that there is not sufficient circulation of air. To correct this condition I directed that a drill hole be drilled and a suction fan installed over same, thus providing circulation of air between the headings and the east shaft. The roof on the east side, where work is being done, is very good indeed, but this fact has been taken advantage of to cut the central drifts far too wide. I directed that the tracks be moved out of the wide drifts and brought up on each side. Sheet ground is being mined, faces about 7 feet high. I returned to this mine on May 20th, and found that my instructions had been complied with. (Inspected by Wallace.)

Claren Mining Co.—This company is operating on a 20 acre lease of the Hatten & Brazneal land. A large concentrating plant has been built and the mine is now being opened up. There is one shaft 240 feet deep. Four drills are operated and 16 miners and 10 top and mill men are employed.

I made inspection of the mine on October 21st, and found the mine and equipment in good condition, but the ventilation not satisfactory. This compay is making the mistake of trying to open up a sheet ground mine from one shaft. Drifts are being driven east and west from the shaft. On the west side a drill hole penetrates the workings and fair ventilation is produced by a blower over the drill hole, but this does not affect the east drifts and the air is very close there. I directed that another shaft be sunk and drift connection made. As this will take some time to complete, I directed that in the meantime another drill hole be drilled, tapping the east drifts, and a suction fan placed over same. Upon speaking to Mr. Babson in regard to another shaft, I found that he had asked for bids on a contract for a shaft and it would be started as soon as the contract could be let. (Inspected by Wallace.)

Chicago-Joplin Mining Company is operating on 20 acres of land leased from J. Campbell, and located in section 8, township 27, range 33, Jasper county. My first inspection of this mine was made on August 20th. On this date I found both hoisting cables badly worn and broken. I ordered them taken off and replaced by new ones. I returned to the mine on August 26th and found that my orders had been complied with. I further examined the mine on this date and found a loose slab in the roof, to which the foreman's attention was directed, with orders to take same down. On December 8th I again visited this mine and made a careful examination, finding everything in and about the mine in good condition. On last date of inspection twenty-two miners and eleven top and mill men were at work at this mine. (Inspected by Brown.)

Childers Brothers hold a sublease and operate 40 acres of land, located in section 7, township 27, range 33, Jasper county. Frank Childers of Galena, Kansas, is manager of the mine. M. G. Esterbrook holds the first lease, and the land is owned in fee by the Rabbit Foot Mining Company of New York City. The mine is reached by two shafts 110 feet in depth. There are three drifts worked at this level, with an average height of 50 feet and an average width of 30 feet. There is a concentrating mill on this property with a daily capacity of 150 tons. Fourteen miners and eight top and mill men were employed on date of this inspection. I made an inspection of this mine on September 8th and found all top structures, hoisting machinery, trap doors and the timbering in the shaft in good condition. The hoisting cable was badly worn and several strands of it were broken in many places. I told Mr. Childers of the dangerous condition of the cable and he promised to replace it with a new cable at once. The two shafts are connected by a drift, giving the mine natural ventilation. The walls and the roofs of the drifts were well trimmed of loose boulders and rock and were in good condition. (Inspected by Brown.)

Clark and Ward Mining Company.—This is a copartnership composed of E. J. Clark and E. E. Ward. Mr. Ward is manager of the mine. The company holds a first lease and operates nine mining lots located in section 4, township 27, range 33, Jasper county. The land is owned in fee by the Continental Zinc Company of Joplin. The mine is reached by two shafts, which are 194 feet in depth. They are connected by a drift at the 170-foot level. The company is operating only one shaft at present, which is operated at the 150-foot level. The drift operated has an average height of 25 feet and an average width of 25 feet. There is an electric concentrating mill on the lease with a daily capacity of 100 tons. Six miners and four top and mill men are employed. I made an inspection of this mine on November 12th and found all top structures, hoisting machinery, cables, tubs, trap doors and the timbering in shaft and mine in good condition. I found a loose slab of rock in the roof of the drift near the face, directly above the place where the shovelers were at work. I called the attenion of the foreman to this and had it taken down. The ventilation was good. (Inspected by Brown.)

Coahuila Mine.—This mine is owned by the Coahuila Lead and Zinc Company, and is located on the Horton land in section 33, township 28, range 32, Jasper county. Having been notified of an accident occurring in this mine on May 25th (see report of same under "Accidents"), I visited the mine the same day and made an inspection of the drift in which the accident occurred. The slab which fell and killed four men was 25 or 30 feet long, 20 feet wide and from two to three feet thick, and was composed of brittle, white flint, commonly called "cotton rock." The point where the fall occurred is northwest of the shaft and in a part of the drift that had been cut since my last inspection of this mine on April 2d. Some 75 or 100 feet from the shaft the drift, which had been from 7 to 15 feet in height, had been raised to a height of 30 feet, and 25 feet in front of the arch of this upraise a pillar had been left dividing the drift; in fact, while the headings had been driven ahead on each side of the pillar, it had not been cut around, and the foot of the stopes were still near the point of the pillar. A fan-shaped slab had been left in the roof, the point running into the top of the pillar and the wide part extending across the drift to the arch of the upraise. This slab fell and killed the men. It had broken at the edge of the pillar, the break extending about three-fourths of the way across the drift toward the arch. The edges of the break were very ragged on both sides, showing that the slab had broken down and had not, as is sometimes the case, slipped out from a natural seam or fault in the rock. The drifts on each side of the pillar are 30 to 35 feet wide. The roof here is soft and inclined to slab, especially in the right hand drift, and mud seams and pockets appear in several places.

This is one of the best equipped mines in this district being one of the few in which skips are used in raising the dirt and in hoisting and lowerng the men. I find the hoist, ropes, skips and safety catches in excellent condition, also the shaft timbering. The lease held by this company covers the ground formerly held under lease by the Commonsense Mining Company, and the drifts from the new shaft are connected with the old workings on the east, The new cuttings being some eight feet deeper, and developing good ore, permits the taking up of a stope through all the old workings and shows the thickness of the ore body to be about 18 feet. Northwest of the shaft the ore seemed to be raising and they were starting to raise the drifts in that part of the mine. The roof in some places is soft and inclined to slab, requiring careful attention and trimming. I warned the superintendent, Mr. McCoy to this effect.

On May 28th and 29th I made a thorough inspection of the Coahuila mine, which had not been in operation since the date of the accident, except that a crew of men had been and were employed in giving the mine an overhauling and carefully trimming the roofs of the different drifts. I made recommendations and suggestions as follows: That an experienced man, or pair of men, be employed to look after the safety of the ground, to do all necessary trimming and to report all dangerous places, in order that the men could be kept from working under them until such time as they were made safe. That such man or men be furnished with a light two-piece extension ladder, and necessary ropes, so that all places in the roof could be easily reached and trimmed. Second, that all work be discontinued in the drift in which the accident had occurred (the right hand drift), and that another upraise be driven from a drift to the right to connect with the heading of the drift first mentioned. This will allow the further working of the ore body in this direction without compelling the men to work and pass back and forth under the dangerous place where the slab fell. Third, that all drifts in the high ground be cut in the future to a width of not to exceed 20′ to 25′, and that large pillars be left. Fourth, that a slab in the roof of the drift just to the left, or south, of the one in which the accident occurred be taken down at once. Fifth, that a post be placed under the edge of the slab in a drift directly east from the shaft. The ground here is only about 7 or 8 feet high and the slab could be easily examined. It seemed to be perfectly tight, but a good big post will preclude all chance of danger. Sixth, I again warned the superintendent, Mr. McCoy, and the ground foreman, Mr. Lewis, of the soft and slabby character of the ground; that they must give it the closest attention and see that the work of trimming is carefully done.

It gives me pleasure to note that my first recommendation had been anticipated, and that while I was in the ground a machine drill was set up to start the upraise, as provided for in the second. Orders were given the trimmers, in my presence, to take down the slab noted in the fourth, and measurement was taken for the post mentioned in the fifth. I returned to this mine on July 24th, and found conditions much improved. Mr. Charles Proctor had taken charge of the ground work and was handling it well. The drifts had been drawn in and the trimming seemed to be carefully done. The recommendations made by me had been complied with. (Inspected by Wallace.)

Continental Zinc Company.—This company owns forty acres of land in section 21, township 28, range 32, near Carterville. Two shafts, 208 feet deep, are operated on this tract. I inspected the top structures and underground workings of this company on March 5th and found same in good condition. The equipment is first-class, being one of the few mines in this district in which cages instead of tubs are used. The company recently installed a steam shovel in the ground, and mules will be used to pull trains of cars from the shovel to the shaft. Sheet ground is now being mined, the ore faces averaging 15 to 18 feet in height. Several drifts are cut too wide between pillars and I notified Mr. Proctor, the foreman, not to cut so wide in future. The roof of the mine is hard and smooth and is kept carefully trimmed as the headings are driven. On the day this inspection was made twelve air drills were in operation and the company had fifty-five miners and eleven mill men employed. (Inspected by Wallace.)

Cornwall Mining Company.—E. B. and J. B. Meredith hold, under sublease, and operate eighteen mining lots located in section 4, township 27, range 33, Jasper county. The Kohinoor Mining Company holds the first lease and the West End Mining Company holds the second lease, the Cornwall Mining Company being the third lessee. The land is owned in fee by the Continental Zinc Company. The mine is entered by a shaft 186 feet deep. Two drifts are operated at this depth, which average about 25 feet in height and about 30 feet in width. There is a concentrating mill on the lease with a daily capacity of 250 tons. Fifteen miners and six top and mill men were employed at this mine. I inspected the mine on September 28th and found all top structures, hoisting machinery, cables, trap doors, tubs and the timbering in the shaft to be in good condition. The ventilation was good. At the intersection of the two drifts, which is near the shaft, a square pen has been built of mining timbers to support the roof. I found that from heavy shooting near this pen the wedges or keys had become loosened and some of them had been shot out altogether, causing the pen to settle from the roof. This made it very dangerous should the pen take sudden weight. I called the foreman's attention to this and he promised to have it put in a safe condition at once. (Inspected by Brown.)

Cuban Queen Mining Company.—This is a copartnership composed of C. W. and E. C. Ritter, J. Gardner, W. Allen, J. P. Hemphill and L. S. Lackey; the latter is superintendent and manager. The company operates and holds a sublease on two lots of the Hemphill Mining Company's lease. The land is owned in fee by the Montgomery Lead and Zinc Company of Pottstown, Pennsylvania, Lee Taylor of Joplin acting as agent for the land owners. The land is located in section 27, township 28, range 33, Jasper county. The mine is reached by two shafts 96 feet in depth, which are connected by a drift. The dirt is cleaned on a 100-ton concentrating mill, which is owned by the first lessees. At the date of this inspection the company was engaged in driving a small prospect drift and only two miners and one top man were employed. I made an inspection of this mine on October 25th and found the top structures, hoisting machinery, cables, tubs, top cars and the timbering in the shaft to be in good condition. The ventilation was good. (Inspected by Brown.)

Cumberland Mining Company.—This company holds, under first lease, and is operating on twenty acres of land owned in fee by the Leonard Mining and Realty Company. The land is located in section 32, township 28, range 33, Jasper county. The mine is entered by a shaft 135 feet in depth. There is one drift worked at this level, which is about 200 feet in length and averages about 25 feet in height and about 30 feet in width. There is a concentrating mill on the lease with a daily capacity of 250 tons. The company has given a contract to T. H. Smith and Norman McKibben to mine the dirt and place it in the mill. Twelve miners and nine top and mill men were employed on date of inspection. I made this inspection on October 28th and found the top structure, hoisting machinery, cables, trap doors and the timbering in the shaft to be in good condition. On inspecting the roof of the drift I found a loose slab over the platform, which I ordered taken down at once. At the face of the drift the miners had broken into a natural cave, which made the drift about fifty feet in height at this point. The cave was lined with loose tiff and slabs, which I ordered taken down. I recommended that a drill hole which penetrated the cave from the surface be drilled again and cleaned out and a blower placed over it to better the ventilation. The foreman promised to make these improvements. (Inspected by Brown.)

Dauphin Mining Co.—This company is operating a mine on a 20 acre lease of the Trinity Z. L. & S. Co. land in 34-28-32, Jasper county. The mine was formerly operated by the Trinity Co. and was called the Trinity mine, but the name has been changed by the present operators to the "Dauphin." There are two shafts 225 feet deep, and connected by drift, on the lease. The concentrating plant is of large capacity and the equipment is first class.

I made inspection of this mine on August 16 and 17, 1909, following the accident in which Elijah Bohannon lost his life, details of which are set forth under "Accident Reports." The roof between the two shafts is very slabby and dangerous. Stope is being taken up from the south shaft—the object being to cut into the mill shaft and then move the pumps from the south shaft to the mill shaft. I directed that the drift in which the accident occurred be abandoned and the stope be taken through the west drift, trimming ahead of the stope. That if the roof in the west drift showed signs of breaking, it be timbered solid or else the stope abandoned and the opening up around the mill shaft be done by sinking the shaft. The drifts south-east and south-west of the south shaft, being under a good cap rock, were in good condition.

Second Inspection. On August 26th I again visited this mine and found it being carefully handled. Trimmers working in the west drift. (Inspected by Wallace.)

Davey Crockett Mining Co.—This company is operating on a 10 acre lease of the T. N. Davey land about 4 miles north-west of Carthage. There is one shaft 234 feet deep on the lease. Timbering ground is being worked and 16 miners and 9 top and mill men are employed. I inspected the mine on October 29th and found conditions satisfactory. A small runaway drift is cut out from the shaft, through hard rock, into the soft ore bearing formation, where timbers are used. Two levels have been cut—the ground being thrown each time—and they are now ready to throw the ground again and take up the third level. This mine has connection with the workings of the Mignonette mine on the west. This connection is protected and kept open by heavy pens. (Inspected by Wallace.)

Daylight Mine.—This mine is operated by the Daylight Mining Company, formerly the Bradford Mining Company. The tract of land upon which this company hold a lease from the Bradford-Kansas City Zinc Company is located in section 17, township 28, range 32, lying between Webb City and Carterville. Two shafts are sunk at a depth of 142 and 132 feet. This mine is one of the interesting sights of the district. A large drift was cut years ago, and this drift, having caved into the mine, was abandoned. Later another mill was built and all the caved-in material was hoisted out, leaving a large opening some hundreds of feet across each way and about 130 feet deep, with perpendicular sides. In this opening the miners could be seen at work as if in a large quarry. The men must have been in danger when working under these sides with the large piles of riprap and boulders on the surface at the edge of this curve, but at present no one is working in this larger opening; the work being done is in sheet ground off to the sides. On the day I visited this mine 28 miners and seven top and mill men were at work. The hoists, cables, shaft, timbers and drifts at this mine were in good condition and the ventilation could not be better in a mine. (Inspected by Wallace.)

DeGraff Mining Company.—This is a copartnership composed of O. and C. M. DeGraff, both of Joplin. The company holds a first lease and operates a mine on 135 acres of land located in the southwest of the northwest of the northeast quarter of section 36, township 28, range 34, Jasper county. The land is owned in fee by the R. F. Brooks estate, of which William Caffee of Carthage is administrator. The mine is reached by two shafts, 155 feet in depth. There are two drifts worked from the mill shaft and three from shaft No. 2, with an average height of 10 feet and an average width of 12 feet. The company has a concentrating mill upon its property with a daily capacity of 150 tons. Sixteen miners and ten top and mill men are employed at this mine. I made an inspection of this mine on August 13th and found everything in and about the mine in a satisfactory condition. (Inspected by Brown.)

Dinger Mine.—This mine is operated by the Dinger Mining Company of Webb City, first lessees of the Bradford and Kansas City Zinc Company. The land is in section 17, township 28, range 32, lying between Webb City and Carterville. Two shafts, with a depth of 140 feet, are operated by the company. I made a careful examination of this mining plant on March 13th. I found the top of the shafts properly protected by guard rails, traveling ways provided around the bottom of the shafts and the timbering in shafts good. The hoisting machinery, tubs and cables were in good condition and the ventilation in the mine was excellent. On date of inspection 32 miners and 18 top and mill men were employed. This mine, like the others on this lease, is in good condition. There is one soft place in the roof, but this is given special attention and no work is being done under it. The company is taking up stope in the sheet formation, and has just about completed this work—the stopes being driven even with the original faces in many places. They will soon commence driving the full faces—about eighteen to twenty feet. The roof and pillars are well trimmed and smooth and the mine generally shows the effects of good management. (Inspected by Wallace.)

I again inspected this mine on October 1st and found it in good condition with the exception of the ventilation in the west drifts, which was poor. There are three shafts on this property, which are connected, and in addition there is connection with the drifts of the Daylight Co. through which the light from the large open cave can be seen. It would seem that with all this natural ventilation there would be no trouble with the air, but since my last inspection the west drifts have been driven ahead until the headings are out of the course of the air currents. A new shaft has been sunk on the west lots and I recommended that connection be made with all possible speed. When this connection is made the ventilation will be satisfactory.

Back-stoping, or overhead stoping, is the method now being used to break down the ore and, while it seems to work very well here in this mine where there is a natural seam to break to, I do not approve its general use in this district because it is very apt to leave the roof ragged and broken and also because it is much easier to trim roof from the pile of dirt in a heading than from a ladder. When headings are being driven the machine men can assist in keeping the roof trimmed while in overhead stoping the roof can only be reached by means of a ladder. Then there is the ragged edge of the back stope which must be trimmed before the shovelers can go under it to work. As I stated above, there is a natural seam in this mine to break to and the roof seems in good condition, but there were several pieces of loose material on the edges of the back-stope which I had taken down while I was in the mine. (Inspected by Wallace.)

Disbrow Mine.—This mine is operated by the Disbrow Mining Company on a 12-acre tract leased from the Bradford and Kansas City Zinc Company, located in section 17, township 28, range 32, between Webb City and Carterville. There are three shafts on the lease sunk at a depth of 145, 149 and 165 feet, respectively. I visited this mine on March 12th and made an examination of everything in and about the plant. I found the hoisting machinery, cables and timbering in shaft in good condition. On date of inspection six air drills were being operated and 35 ground men and 16 top and mill men were employed at the mine. Among the recent improvements invested in by the company may be mentioned a gas engine and double lift pump for mine drainage; a gas engine to drive mill and compressor; a new shaft head and hopper to replace those destroyed by fire a few weeks ago. At this mine a heavy stope is being taken up in the sheet ground and no precautions are omitted. The roof and pillars are trimmed each day well in advance of the work. Building and equipment are good, and I consider the mine in good condition. (Inspected by Wallace.)

I made another inspection of this mine on October 16th and found same in good condition with exception of some pillars on which there were loose "bags." A regular roof trimmer is employed at this mine to do the ladder work and he was at once set to work to trim these pillars. This mine is very well pillared—the pillars being large and set close together. The advantage of this is appreciated now that they are taking up stope. The heavy shots fired in taking up stope naturally loosen material on the sides of the pillars and I cautioned the superintednent to watch the pillars closely. The roof in several of the south drifts is a cemented mixture of salvage and flint, but it seems to be standing well when once trimmed. Hoists and cables in good condition. (Inspected by Wallace.)

Dominion Mine.—The Ruby D. Mining Company is operating this mine under a sublease from the Dominion Mining Company, the operators controlling five acres located in section 21, township 28, range 32, Webb City, the land being owned by J. W. and B. C. Aylor. Two shafts are on this lease, one at a depth of 155 feet and the other 185 feet. The shafts are connected by drifts with Avondale Mine No. 1. I made an examination of this mine on April 15th, and found conditions somewhat approaching those at the Avondales with the exception that the formation is quite a bit harder. Here, too, large ore bodies have been worked out and drifts are very high. I made careful examination of the floor of drifts, in which tracks were laid to the shaft, for evidences of any fresh material which might have fallen from the roof or sides, but could find none and was assured by the men that nothing ever fell. I also examined the roof and sides of drifts as well as possible by aid of torches made of waste, saturated with kerosene, but found nothing that appeared to be loose. There were several drifts in which falls had occurred, but no work was being done in same and no tracks were laid in them. Where the men were working the drift had been driven in under on a semi sheet ground formation and was only about ten feet high. Another drift was being started off from this low drift into new ground on the west. I inspected this mine again on November 20th, and the defects found on date of inspection are set out in the following notice, which was mailed to the operators: "Following inspection of your mine, I wish to give the following recommendations and directions: That loose braces on derrick be nailed back into position; that loose lacing board, near bottom of cribbing in shaft, be repaired; that all loose material be trimmed from roof and sides of drifts and from sides of pillars; that for this purpose a ladder be furnished the ground foreman, long enough to reach any point in the roof of the drift now being worked--the ladder now in the ground being only about twenty feet long—and that you at once commence the work of cutting an air connection with the heading of the west drift (the one you are now working). This air drift should be pushed with all possible speed, as it is badly needed, and I hereby instruct you not to work any men in said heading until the air drift is completed and good ventilation secured." (Inspected by Wallace.)

Dorothy Mine.—This mine is on the John C. Guinn land in section 7, township 28, range 32, one mile north of Webb City. It is operated by the Home Run Mining Company under a sublease from the Ground Floor Mining Company. I examined this mine on March 29th. The company had just completed the erection of a fine concentrating plant of 300 tons capacity per ten-hour shift. The machinery and general equipment was new and first-class throughout. The operations of the company will be on a continuation of the run of ore from the Chicago Lead and Zinc Company mine on the south, the latter company having cut up to the south line of the Home Run lease. This gives the Home Run Company a large face of ore upon which they can start at once without expensive development work—the Home Run shaft, 208 feet deep, having been sunk just ten feet from the line and also on air connection.

I inspected this mine again on July 27th at the request of H. C. Jenkins, vice-president and manager of the Home Run Mining Company. On date of second inspection I found the hoist, cables, trap doors, timbering in the shaft and the interior of the mine in general in very good condition. There were a few small slabs in the roof of the drifts, which were ordered taken down at once, and instructions were given to the ground foreman, in my presence, to that effect. I recommended that hand rails be placed on two sides at the top of the shaft for the men to hold to in entering and leaving the tubs. This Mr. Jenkins promised to give immediate attention. I also notified the company on date of this second inspection that pillars must be left not over 40 feet apart..

I returned to this mine on December 20th and again made a thorough examination of the underground workings. I found that the ground had been badly handled and that my instructions as to the leaving of pillars was disregarded and that one drift had been cut 70 feet wide. As a consequence, a large slab had fallen in this drift, but luckily at night when no men were working. The management of the mine was changed recently, and I think the new manager will do better. The defects in the mine, as found on date of last inspection, were set out in a writen notice to the operators and read as follows: "You are hereby notified that all powder in excess of the requirement for one shift must be kept in magazine on top; to fill in on south side of the collar of the shaft to within a few inches of the top of the cribbing; to level off the surface so filled in and to place a good strong hand rail for the men to hold to in entering and leaving the tubs; to place a square set, formed of heavy timbers, near the center of the wide drift in which slab fell; for additional support to the roof in this drift single posts should be placed around the square set; to place posts under the broken edges of the slab now showing in roof around this wide drift; to place posts under slab showing in roof just south of the shaft; to place posts under slab showing in roof between shaft pillar and pillar near powder house. These betterments to be made as per understanding between Mr. Stevens, Mr. Carroll and myself. In future cutting of the ground pillars must be be left not over 35 feet apart. I also recommend that at least two step ladders be furnished for use in trimming roof. These ladders will also be of great assistance to the machine men in setting up their posts and blocking over same. (Inspected by Wallace.)

D. S. and Y. Mine.—This mine is located on the T. W. Cunningham land in section 16, township 27, range 33, Jasper county. The first lessee, the D. S. and Y. Mining Company, control seventeen and a half acres of land. The mine is reached by a shaft 115 feet deep with one outlet. A traveling way is provided around the bottom of the shaft and is in fair condition. The timbering in the shaft is good and the steam hoister and cables are in first-class condition. The company stores the powder supply in a magazine 200 feet from the main shaft, and only a sufficient amount for one day's use is taken underground. A concentrating mill with a daily capacity of 150 tons is on the lease. This is a new mine in every respect, as all buildings have been built and the shaft sunk within the last three months. My first visit to this mine was on November 9th. On that date I found several loose slabs and boulders in the roof of the drift, which I ordered taken down. I returned the next day and found that my orders had been complied with and that the roof had been put in good condition. (Inspected by Brown.)

Durby Lead and Zinc Company.—This company is opening up a mine on a 7 acre lease of the Ground & Irwin land at Porto Rico, the first lease being owned by the First National Mining Co. One shaft 150 feet deep is being operated. There is another shaft 158 feet deep, on the lease which can be cut to for air. As soon as the drifts are sufficiently opened up a concentrating plant will be erected.

I inspected the mine on October 27th and found conditions satisfactory except the ventilation, which was poor. However, an air drift now being driven to connect with the old workings on the west will soon correct this condition. The ore occurs in a conglomerate formation and the drifts will have to be kept narrow and carefully trimmed. Only 4 miners and one top man (hoisterman) are employed at present. The dirt is being piled in a long dump pending the erection of a mill. (Inspected by Wallace.)

Durston Mining Company.—I inspected this mine on September 18th and found 17 miners and 8 top and mill men employed. Four air drills were being operated. The mine is entered by one shaft 180 feet deep. Top structures, hoist and cable were in good condition. The mine is fairly well pillared but the formation is very slabby and bad. Nothing but very careful attention will keep this mine safe. I recommended that a regular roof man or men be employed all the time; that the drifts be kept narrow and that a slab near the shaft be timbered or taken down. Air drifts have been driven to connect with the old workings of the Provident mines on the west, but the drift here tapped the old workings where they were caved in. Some air is coming through but not enough to furnish good ventilation. Another drift is now being driven to tap the old workings further to the south as it is not thought they are caved there. I directed that one drill be kept on his work until the drift should be completed. (Inspected by Wallace.)

Electrical Z. & L. Co.—This company is operating on a 40 acre lease on the Guinn land. There is one concentrating plant on the property, but practically two mines as the north ground is entirely separate from the south ground. Ten air drills are operated and 60 miners and 18 top and mill men employed. The north ground is entered by an incline, 7 feet x 12 feet in size, reaching a vertical depth of 208 feet, and skips are used for hoisting. The south ground is reached by a shaft 175 feet deep. Both of these mines have connection with other mines, which gives natural ventilation. I made an inspection of this mine on August 20th and found the north ground in good shape with exception that pillars were not left close enough together. The roof is very good here and I could detect no signs of its giving down, but I could see no use in inviting danger by abusing a good roof and cutting too wide so I directed that pillars be left closer. In the south ground the roof is entirely different, being much softer. Here, too, some of the drifts are cut too wide and, shortly before my visit, a large slab had fallen. Men were at work timbering around the edge of the break caused by the fall of this slab. I found "drummy" roof in two other drifts and directed that they be timbered. Gave instructions that pillars be set much closer in this ground. Hoists, cables, shaft and incline in good condition. (Inspected by Wallace.)

Engineers Zinc Co.—This company has a sublease from the Providence M. & M. Co. of 9 acres of land owned by the Ashcraft-Reynolds Mining Co. There is one shaft 187 feet deep in operation on the property. Sheet ground is being worked, the ore being concentrated on a mill of about 200 tons capacity. On June 9th I found everything about the property in good condition. The mine has a very good roof and there was only one slab in evidence. This slab was caused by breaking up into drifts cut at a higher level by the Missouri Mule Mining Co. and is well caught between pillars, posts being used under the edge as additional support. The ventilation is good, the mine having connection with the Missouri Mule and Providence mines. Five drills are operated and 30 miners and 11 top and mill men employed. (Inspected by Wallace.)

Evans Mine.—On July 27th I met Mine Inspector Brown and Mr. George A. Scholes, inspector for the Frisco, Missouri Pacific and Kansas City Southern Railroad companies, at the Evans mine on the Waltour M. Robinson land, near Midway. The meeting was at the request of Mr. Scholes, who reported that the drifts in this mine were in bad condition and dangerous to both the employes of the mine and the tracks of the Frisco and Missouri Pacific Railroad companies. Owing to the burning down of the pumping station the mine was flooded with water, and we were unable to inspect the ground on this day, but we will give same attention as soon as the mine is drained. (Report by Wallace.)

Fire Fighters Realty Company.—This company is composed of some of the members of the Joplin Fire Department. They own and operate three mining lots located in section 3, township 27, range 33, Jasper county. The mine is equipped with steam hoisting and drilling machinery. The dirt is cleaned on a custom mill. The shaft is 180 feet deep. There is one drift operated at this level with an average height of 20 feet and an average width of the same. I made an inspection of this mine on November 8th and found the top structures, hoisting machinery, cables, trap doors and tubs in good condition. There were two natural caves opening from the sides of the shaft which were filled with loose rocks. This endangered the lives of the miners in descending or ascending the shaft. I called the attention of the foreman to the loose rocks, and he promised to remove them at once. The ventilation was good. At this date four miners and two top men were employed at the mine. (Inspected by Brown.)

General Lead and Zinc Company.—This company holds first lease and operates 20 acres of land located in section 35, township 28, range 34, Jasper county. The mine is entered by a shaft 171 feet in depth. The ground is of a sheet formation and the drifts are cut on an average of about 7 feet in height and about 30 feet between the pillars. The company has a concentrating mill on the property with a daily capacity of 150 tons. The land is owned in fee by S. H. Claycomb of Joplin. Eleven miners and nine top and mill men are employed at this mine. I inspected this mine on September 23d and found the mining machinery, cables, trap doors, tubs, hoisters and the timbering in shaft to be in good condition. The ventilation, which is produced by drill holes, is fair. I recommended to the superintendent that he drive a drift to connect this mine with the White Swan mine, so as to afford an escape for the miners in case of an accident, and also to better the condition of the air. He promised to do this at once. Other conditions in and about the mine were satisfactory. (Inspected by Brown.)

Genesee Mining Company.—This company is operating on a 10 acre lease of the Wear, Bowman & Scott land. Sheet ground is being mined, the workings being entered by two shafts 180 feet deep, connected by an air drift. Five air drills are in operation and 25 miners and 12 top and mill men employed. On September 2d I found the top structures, hoists and cables in good condition. The mine was well pillared and was also in good condition with exception that roof holes had been drilled too high and the roof "burned" in several places. I notified the assistant superintendent and the ground foreman that such work must not be allowed as it was very liable to start a slab. The ground foreman stated that it had been done before he took charge of the mine and that he would allow no more of it. I again inspected this mine on October 18th and found it in safe condition. (Inspected by Wallace.)

George H. Mine.—This is one of the mines operated by the Federated Mines and Milling Company under first lease from the General Lead and Zinc Company, the owners of the land. The tract controlled comprises 10 acres, situated in the Prosperity district, more particularly described as lying in section 28, township 28, range 32, Jasper county. I examined this mine on March 4th and found same in good condition, with the exception of one of the south drifts, where there was a loose slab in the roof. A part of this slab had been taken down, and the superintendent, Mr. Aull, promised to have the rest taken down and to have the roof trimmed before men would be permitted to work under it. This mine was thoroughly overhauled last December. A new jig was built in the mill and a new 14-inch crusher and one set of 30-inch rolls were installed. The installation of a new Arbuthnot sludge table for the handling of fines increases the daily capacity of the plant. (Inspected by Wallace.)

I made a second inspection of this mine on September 27th, and found that the south drifts had been driven beyond the course of the air currents, between the shafts and the connection with the Arkansas mine, and the air was close. However, as the George H. is driving south and the Goodrich mine is driving north, and the drifts are not far apart (I could hear the Goodrich machines running), this condition will soon be remedied by a connection. The slab spoken of in report of former inspection has been taken down until it tightened up between two pillars and then posts were placed under the edge. I noticed a hole in the hopper, through which rock might fall into the shaft, and directed that it be repaired at once. I also noticed a deep hole, with perpendicular sides, which had recently appeared on the property, near the main road. This hole, which is probably a natural cave-in or sink, I considered to be dangerous, as it was some 40 feet deep, 10 feet in diameter and the top was flush with the surface. I asked Mr. Aul, superintendent for the Federated Co., to protect this hole so that no one could fall into it. Mr. Aul readily agreed to do this.

In driving this property later I noticed that the hole spoken of above has been protected by a wall of rock and earth built around it. This serves the double purpose of preventing anyone from walking into the hole and of keeping water from running into it and thence into the mines. (Inspected by Wallace.)

Gibson Mine.—I inspected this mine on April 27, and found the mine in fair condition considering the formation. I notified Mr. McKenzie, the ground foreman, to take down two slabs in the southwest drifts and he promised to do so at once. In the south part of the mine they were trimming pillars and preparing to abandon the drifts there. The pillars being large, they were driving through the center of them and leaving the two ends as a support to the roof. The work was being done in a workman-like manner and, as the ground showed no signs of taking weight, I had no complaint to make. McKenzie agreed not to take any of the pillars entirely out. Five air drills were being operated and 25 miners and 9 top and mill men employed. (Inspected by Wallace.)

On June 4th Henry C. McKenzie was fatally injured by a premature explosion of shot, or rather, two shots in the Gibson mine on the Luke and Ash land. I immediately went to the mine and made an investigation of the cause of the accident, a full report of which is given under the heading "Reports of Accidents." On June 7th I also made an examination of the mine and found the hoisting cable to be badly worn. I called the attention of Mr. McLanahan, the superintendent, to this fact, and directed that a new cable be placed in use at once. I also noticed that the roof in one of the southwest drifts was soft and inclined to slab, and I gave instructions that a pillar be left in the center of the drift, and that several posts be placed in order to give further protection. One slab that was loose I ordered taken down at once. I warned Mr. John Cope, the ground foreman, that as the roof in some parts of the mine is soft, he should give it extra attention and leave nothing undone that would make for the safety of the men. I was pleased to note that Mr. McKenzie had complied to the letter with the instructions given him by me at the time of my last inspection. (Inspected by Wallace.)

Gobbler Mining Company.—I inspected the Gobbler mine on the Eleventh Hour lease of the Chinn land, in 21-28-32 Jasper county, on September 9th, and found 20 miners and 7 top and mill men employed, 3 air drills being operated. Sheet ground is being mined, faces about 9 feet to 12 feet high. The defects noted at this mine are set forth in the following written notice to this company:

September 9, 1909.

Mr. F. L. Kerrick, Supt. Gobbler Mining Company, Webb City, Missouri:

Dear Sir: Following my inspection of the Gobbler mine this morning, I wish to make recommendations and requests, as follows:

First—The cable now in use at the mill shaft is very badly worn and should be replaced by a new one at once.

Second—There is a dangerous slab in the second drift from the left end of the face, which should be taken down without delay.

Third—I notice that your shaft is rather small and that there are humps or projections in the sides of same. These projections should be cut off and the shaft squared up below the cribbing.

Kindly notify me when the above mentioned betterments have been made.

Very truly yours,

CHAS. P. WALLACE,
Inspector Western District.

Golden Glow Mining Co.—This company controls and operates ten acres of land in 6-28-32, Jasper county. The land being owned in fee by the Underwriters Land Co. There is a concentrating plant of 200 tons capacity on the property, the machinery being driven by electric power furnished by the power station at the main plant of the Underwriters Co. There are two shafts on the lease, but only one shaft is used for hoisting. The other shaft is an air shaft and is also used in conducting the power wires to the centrifugal pumps at this mine and the American Beauty mine. On date of inspection, April 22d, thirty-five miners and ten top and mill men are employed, I find the mine and equipment in good condition. The ventilation is good, the mine having, besides the shafts, connection with the Underwriters and American Beauty mines.

On November 5th I visited this mine and directed that guard rails be placed on the derrick stairs and on the boulder tramway.

On November 12th I again stopped at the mine and found that the guard rails had been placed as I had requested. (Inspected by Wallace.)

Good Shepherd Mine.—This mine is operated by the Center Creek Mining Co. on a ten acre lease of their own land, lying between Webb City and Carterville. Two shafts 150 feet deep enter the mine, and there is also an incline now being driven into the old cave-in on the east. The ore is cleaned on a plant of 150 tons capacity. Three air drills are operated and 12 miners and 9 top and mill men employed. I examined this mine on September 7th and found the hoists and the cable at the mill shaft in good condition; the cable at the north shaft had a few broken wires, but as no men or ore are hoisted there—nothing but dull and sharp steel being hoisted in this shaft—I passed it as safe for that purpose. The mine is very well pillared, being opened with the view of later on driving drifts under the cave-in on the north and east and pulling it, and is in good condition. A lime boulder was exposed in the roof of a small drift near the mill shaft. This boulder was bedded in soapstone and was seemingly tight, but I did not like the looks of it and directed that it be either taken down or timbered up so that it could not fall. This was the only recommendation that I had to make. I visited this mine again on October 5th for the purpose of looking over the incline into the cave-in on the east. Found it in good shape. (Inspected by Wallace.)

Good Mining Company.—This company is operating on a ten acre lease in 12-28-33, Jasper county. The land is owned by the Carter estate, and is controlled under first lease by the Big Stick Mining Co. There are two shafts on the lease 185 feet in depth. The shafts are connected by drift and are both in operation. Sheet ground is being mined, the faces being about 9 inches high. Fourteen drills are operated and 65 miners and 20 top and mill men employed. In addition to the two shafts, this mine has connection with the workings of the Providence mine on the east. On date of inspection, May 3d, I found the top structures, hoists and cables in good condition and the interior of the mine also in good shape with exception of one very bad place in the roof near the north shaft. Care is being taken to cut around this place so that no tracks will be under it. There was another place west of the north shaft where the roof did not sound just right to me, and I instructed the foreman, John Wenk, to place some timbers there. He agreed to do this at once. (Inspected by Wallace.)

Second Inspection.—I again inspected this mine on October 7th and found it in good condition considering the formation they are now in. East of the north shaft the drifts have encountered a seam or watercourse in the roof, which is causing much trouble, while the roof in the west drifts has become softer and is inclined to slab. Mr. Wenk seems to be handling the ground as well as could be expected and beyond urging that the utmost care be exercised, I had no recommendation to make. I noticed that the timbers had been placed as I had requested. Stope is now being taken up at the mill shaft but at the north shaft headings are being driven. At the time of this inspection the air was very smoky. I questioned Mr. Wenk in regard to this and he assured me that this condition was not usual, the air being smoky from a heavy shot in the mill shaft ground at noon and a lot of squibs in the north ground. As there are two shafts and also connection with the Providence mine, I should judge the ventilation to be good as a rule. (Inspected by Wallace.)

Goodrich Mine.—This mine is on land owned by the General Zinc and Lead Company, in section 28, township 28, range 32, in the Prosperity district. The mine is operated by the Federated Mines and Milling Company, the first lessees. Two shafts, which are 200 feet deep and connected by drift, are on the lease. On date of inspection, March 9th, four air drills were operated and 19 miners and 10 top and mill men were at work. The company recently built a tramway, 300 feet long, from shaft No. 2 to the mill. Other recent improvements are an 80-horse power gas engine to drive the mill and a sludge table for the handling of fines. The mine was not in the best of condition, having to contend with a shelly, soft roof. This difficulty the company is trying to overcome by dropping down and leaving a harder strata for a cap rock. Several loose slabs were in evidence on date of inspection, but the management seemed to be using due precaution to prevent accidents by falls, as I noticed that one large slab had been shot down and holes were drilled in others preparatory to shooting them down. I warned them to watch the roof carefully. Sheet formation is being worked and the ore faces will run from 8 to 12 feet high. (Inspected by Wallace.)

I made second inspection of this mine on October 8th and found conditions improved since the last inspection. The drifting is now all toward the west and northwest and the cap rock is better. It is rather soft looking in places, but has the advantage of being tough and springy. The middle drift west seemed to me to be too wide and I directed that a pillar be turned in the center of this drift at once, and in future not to cut wide. Some of the lacing boards near the top of the shaft were loose and broken—showing sharp ends—and I instructed Mr. Collins, the ground foreman, to make the necessary repairs at once, so that no one would be caught on them and perhaps thrown out of the tub. I also called Mr. Aul's attention to them. (Inspected by Wallace.)

Gouveneur Lead and Zinc Company.—This company holds a first lease on 12 acres of land owned by the Excelsior Lead and Zinc Company, and located in section 18, township 28, range 33, Jasper county. Two shafts are on the lease, one having a depth of 112 feet and the other 120 feet. I inspected this mine on November 16th and found the steam hoist, cables, trap doors and timbering in shaft in first-class condition. The ventilation in the mine was bad, and I recommended that the two shafts be connected by drift, which would improve the circulation of air and at the same time provide an escape for the miners in case of accident. The powder supply is stored in a magazine 200 feet from the shaft, and only enough for one day's supply is taken underground. The company was using hand drills, and on date of inspection 8 miners and 8 top and mill men were employed. A concentrating mill, with a daily capacity of 150 tons, is on the property. (Inspected by Brown.)

Grace Mine.—This mine is operated by the Grace Zinc Company on land owned by the Granby Mining and Smelting Company, located in section 33, township 28, range 33, near Chitwood. On Sunday, May 2d, Bruce Larabee was fatally injured by a falling rock at shaft No. 5 of this company, a report of which will be found under the heading of "Accidents." Upon being notified of this accident, I visited the mine and made a thorough inspection of drifts where work was being done. It seems that the company was taking down some 15 to 18 feet of roof containing good ore. For convenience, the top 6 or 7 feet was driven as a heading, leaving a projecting ledge of from 9 to 12 feet thick. This ledge was shot down from time to time as the heading was driven forward. The ground is hard, machine ground flint, spar and lime—but the shattering force of the shots is such that it is necessary to trim after every round is fired in order that the shovelers may with safety remove the dirt broken. While this is the second accident that has happened at this mine in the space of one week, I could not find that the company has been to blame in either instance; on the contrary, it seems that every precaution was and is taken by the management for the safety of the men. Mr. L. Argyle, the foreman, is a man of large experience in the operation of mines and bears a first-class reputation as a miner. There are some bad drifts in the mine, but where operations were being carried on the mine seemed to be in as good condition as careful management could place it. (Inspected by Wallace.)

Grace Zinc Company.—This company controls, under first lease, 29 acres of land located in the northwest quarter of the southwest quarter of section 33, township 28, range 33. The land is owned in fee by the Granby Mining and Smelting Company. There are three shafts operated by this company, shafts Nos. 2, 5 and 6, their depths being 185, 160 and 175 feet, respectively. The machinery embraces one concentrating mill with a daily capacity of 250 tons, two 75-horse power electric motors, one air compressor, two crushers, two jigs, two Wilfley tables, three sets of rolls, six air drills and three steam hoisters. I made an inspection of this mine on August 9th, and an examination of the top structures, hoisting machinery, cables, etc., gave every evidence of security and safety. The timbering in shafts was in good condition. I found the mine well ventilated and in good condition, with the exception of the old workings in shaft No. 5, which were in a dangerous condition. However, the ground foreman informed me that the men had strict orders not to enter it. There were 22 miners and 20 top and mill men employed at this mine on date of inspection. (Inspected by Brown.)

Grace Ping Mining Co.—This company is operating on a 20-acre lease of the Ping land in 32-28-32, Jasper county. There is a 200-ton concentrating plant on the land. The four shafts on the lease are sunk to a depth of 150 feet, but none of them are now connected as the old drifts are down. I examined this mine on September 21st. Soft ground was worked at this mine by the company formerly operating it, and it seems that two levels were cut and allowed to settle. The ground has been down for several years and is solid now, having followed down from the surface. The present operators are timbering up some small drifts through the old ground with the view to testing the bottom and taking another level. The drifts would be rather rough-looking to any one not used to timbering ground, but the old timbers were locked in such a way that they could not come down and there was no danger as long as the drifts were kept small. Some air was coming through the old ground, but not enough for good ventilation. There was a drift on the south side of the shaft which had been started toward the mill shaft. The timbers in this drift were standing in good shape and I directed that it be driven ahead to connect with the mill shaft so as to give good ventilation and also an escapement., The shaft where work was being done has been retimbered and though small, is in fairly good condition. Hoist and cable were in good shape. Seven miners and seven top and mill men were employed. (Inspected by Wallace.)

Grand Central Mining Company.—This company controls and operates ten acres of land owned by W. E. Johnson. The land is located southwest of Joplin. There are two shafts 140 feet deep on the property. On date of inspection, April 28th, I found the hoist and cables in good condition, but can not say the same of the shaft nor of parts of the mine. The cribbing at the top of the shaft needed repairs badly and several drifts in the mine had caved in. I notified this company to make the necessary repairs to the cribbing and that no further work must be done in the caved drifts. On May 15th I received a letter from this company stating that the repairs had been made as per my request. Eighteen miners and 9 top and mill men are employed (Inspected by Wallace.)

Green Dog Mining Company.—This is a copartnership composed of A. W. Pickering and James Swan of Detroit, Michigan. J. W. McClenahan of Joplin is superintendent and manager. The company operates under a first lease on 40 acres of land located in section 6, township 27, range 32, Jasper county. The land is owned by J. W. Ground, Stickney and Smith of Carthage. The mine is reached by two shafts, the average depth of which is about 75 feet. They are known as shafts Nos. 2 and 3. There are three drifts from shaft No. 2, with an average height of 7 feet and an average width of 10 feet, and one drift from shaft No. 3, which averages about 8 feet square. The shaft and drifts are all timbered. The ground is of a soft soapstone and boulder formation. The company has a concentrating mill on its property with a daily capacity of 100 tons. Sixteen miners and eleven top and mill men are employed here. I made an inspection of this mine on October 21st, and found all top structures, hoisting machinery, cables, top cars, tubs and the timbering in shaft and mine in fair condition. The ventilation was very bad. I recommended to the superintendent that he connect the two shafts by drift, so as to afford an escape for the miners in case of accident at either mine, and also to improve the ventilation. He promised to do this as soon as possible. (Inspected by Brown.)

Ground Floor Mining Company.—This company is operating under a first lease on the John C. Guinn land, controlling 40 acres in section 7, township 28, range 32, Jasper county. The two shafts operated on the lease are 200 feet deep and are connected by drift. Traveling ways are provided around the bottom of shafts and the timbering in these shafts is good. Steam power is used for hoisting and the hoisting machinery is in good working order, except that I found the rope at the mill shaft well worn, and I directed that it be replaced by a new one. Powder is stored in a magazine on top, and only one day's supply is taken into the mine. Ventilation in the mine was fair. On day of inspection the company had eight air drills in operation and 40 miners and 20 top and mill men were employed. Sheet ground is being worked in this mine and on faces about 20 to 25 feet high. The cuttings from the mill shaft are about 10 feet high. Stope is being taken up from shaft No. 2, the stopes not yet driven back to the headings. Several of the drifts are much too wide, but the roof is good and seems to be standing well. I cautioned the management, however, that pillars should be left not over 40 feet apart. I visited this mine on June 19th and found that a new cable had been put on at the mill shaft soon after requested by me on March 22d. (Inspected by Wallace.)

On July 30th I visited the Ground Floor Mine and made a second inspection of same, finding the hoists, cables, trap doors and timbering in the shaft and mine in good condition. Since my last inspection on March 22d, new cables had been put in use in both shafts and a pen built in the widest place in the northwest drift. As mentioned in my report of the first inspection, the roof in this mine is very good, except in some few places, but the drifts have been cut far too wide, notably on the north side, along the line between the Ground Floor and the Underwriters mine. In this part of the mine it will be impossible to take up stope on this account. This is a very shortsighted and dangerous practice, but it seem to have been general among the sheet ground mines of this district. I again cautioned the management that in making new cuttings they must leave the pillars not over forty feet apart. I also noticed that there was considerable loose powder lying around in the mine and I recommended that a small powder house be built in the ground, in which powder for each day's use could be kept under lock and key. (Inspected by Wallace.)

Harrison Mining Company.—B. H. Dye of Joplin is superintendent and general manager of the mine. The company holds first lease on 18 mining lots located in section 5, township 27, range 33, Jasper county. The land is owned in fee by the Pittsburg-Missouri Zinc and Lead Company of Joplin. The shaft is 184 feet in depth and is operated at the 176-foot level. The drifts average about 12 feet in height and about 30 feet between pillars. There is a mill on the property with a daily capacity of 250 tons. Twenty-eight miners and eight top and mill men are employed at this mine. I inspected this mine on September 25th and found all top structures, mining machinery, cables, trap doors, tubs, etc., in good condition. The timbering in the shaft was good. I found that the drifts had been cut too wide for the safety of the miners, and

I recommended that in future this ground be cut no wider than 18 or 20 feet. The ventilation was good. (Inspected by Brown.)

On December 15th I assisted Inspector Brown in an inspection of the Harrison mine. See Brown's report for defects and recommendations made. (Wallace.)

Henrietta Mining Company.—This company is operating on a 10-acre first lease of the Cosgrove land in the Duenweg district. There is one mine on the lease, equipped with a 156-ton concentrating plant, entered by one shaft 195 feet deep. Four drills are operated and 15 miners and 8 top and mill men employed. I made an examination of this mine on October 27th. Sheet ground is being mined with faces about 15 feet high. The defects noted were three small slabs, which were seen to be loose and which I ordered taken down at once, directing that a ladder be furnished for trimming; humps in the shaft; need of improvements at top of shaft where cribbing was built up so high that it was difficult to enter and leave the tubs, and poor circulation of air in the mine. I directed that the humps be shot out of the sides of the shaft so that it would be smooth (shaft was in hard rock and was cribbed for only a short distance); that a platform be built almost flush with the top of the cribbing at the top of shaft and that hand rails be placed. Ventilation was secured by means of a blower placed over a drill hole and was not sufficient. There is another drill hole about 15 feet ahead of the north drift and I directed that they at once cut to this drill hole and install another blower or suction fan. The present operations being in the nature of prospecting to determine the extent and richness of the ore body, I did not feel justified in ordering a new shaft to be sunk until such time as the mine was proven. (Inspected by Wallace.)

Herald Lead and Zinc Company.—This company holds under first lease, and operates 43 acres of land located in section 2, township 27, range 34, Jasper county. The land is owned in fee by the Miami Realty and Mining Company, of which A. J. Smith of Joplin is secretary. The mine is entered by an incline shaft 295 feet in depth. The drifts are worked at the 235-foot level. They average about 60 feet in height and about 30 feet between pillars. The dirt is screened and dumped into a hopper and is hoisted from the 295-foot level in two-ton cars, which are drawn over a track laid to the surface of the incline shaft. The company has a concentrating mill upon its lease with a daily capacity of 200 tons. Twenty-five miners and fourteen top and mill men are employed at this mine. I made an inspection of this mine on September 16th and found all top structures, hoisting machinery, cables, car tracks and the timbering in the shaft in good condition. Upon inspecting the drifts I found several loose slabs on the walls and in the roofs, to which I called the attention of the foreman, and recommended that he give the walls and roof a thorough trimming, which he promised to do at once. The ventilation is bad, being produced by two drill holes. The company is now engaged in drilling the third hole. I recommended to the superintendent that he sink an air shaft, which he promised to do, provided this new drill hole does not sufficiently improve the ventilation. (Inspected by Brown.)

Highgrade Mining Company.—This is a copartnership composed of F. Childers, G. W. Moore and G. Harnady, residents of Galena, Kansas. The company holds a sublease and operates on nine acres of land situated in section 12, township 27, range 34, Jasper county. The first lease was given to Yates & Joseph by the landowners, Connor Realty Company of Joplin. A concentrating plant is located on the lease and has a daily capacity of 50 tons. The mine is reached by a shaft 50 feet deep, with two drifts running from this shaft, with an average height of 30 feet and an average width of 16 feet. On date of inspection six miners and six top and mill men were employed. I made an inspection of this mine on September 7th and found the hoisting machinery, cables and trap doors in good condition. The shaft and the drifts were also in good condition, with the exception that the ladder in the shaft was loose and swinging. This condition made it dangerous for the men to climb in and out of the mine. I called the foreman's attention to this neglect and he promised to make it secure at once. The ventilation in the mine was good. (Inspected by Brown.)

Hold Out Mining Co.—I made an inspection of this mine on August 9th and found same, together with all equipment, to be in safe and satisfactory condition.

The mine is entered by two shafts, averaging 225 feet in depth, which are connected by drift. At time of inspection the ground was just being opened up so that the necessary tonnage can be secured. The roof formation is not very good, being a soft cottonrock. Pillars so far left are close enough. Six drills are operated and 23 miners and 11 top and mill men employed. (Inspected by Wallace.)

Ice Plant Mining Company.—This company is operating on a ten-acre lease in 7-28-32, Jasper county. The first lease on this land is owned by Gibson & Boggess and the fee by John C. Guinn. The mine is equipped with a 200-ton concentrating plant. Two shafts 180 feet deep give access and ventilation to the workings, but only one shaft is used for hoisting. Sheet ground is being worked—faces about 9 feet high. Five drills are operated and 26 miners and 9 top and mill men are employed. I inspected this mine on August 13th and found it in good condition with exception of north and east drifts having been cut too wide. One slab had fallen at some previous time and the edges left by the fall of this slab are now supported by several pens. I sounded the roof in the wide drifts, and if there were any slabs giving down I could not detect it in that way on account of them being too thick. I recommended that pillars be set closer in new cuttings; that a guard rail be placed to protect the drive belt of air compressor, and that a hole in the hopper be repaired so that no rock could fall into the shaft. Hoist and cable in good shape. (Inspected by Wallace.)

I against visited this mine on September 25th and found that the guard rail had been placed and the hole in the hopper repaired as per my request. (Inspected by Wallce.)

Jack Harvard Zinc Mining Company.—This company holds under first lease, and operates eight mining lots located in section 3. Two shafts are operated on this lease, known as shafts Nos. 3 and 4. No. 3 shaft is operated at the 86-foot level. Two drifts are worked at this level, which average 20 feet in width and about 30 feet in height. One drift is operated at shaft No. 4, which averages about 30 feet high and 30 feet wide. The company also holds a first lease on four mining lots located in section 4. There is one shaft on this lease which is worked at the 171-foot level. One drift is worked from this shaft, which averages about 40 feet in height and about 30 feet in width. The company also holds first lease on five mining lots located in section 9. There is one shaft operated on this lease, known as the Nestor shaft. This shaft is worked at the 90-foot level. One drift is operated, having just been started from the shaft, and is about 20 feet high and about 20 feet wide. All of the land is in township 27, range 33, Jasper county. The land is owned in fee by the Continental Zinc Company of Joplin. The company has a concentrating plant where the dirt from its several leases is milled. Eleven miners and fourteen top and mill men were employed by this company on date of inspection. I made an inspection of the Nestor shaft and of shaft No. 6 on September 22d; of shafts Nos. 3 and 4 on September 24th. I found all top structures, hoisting machinery, cables, trap doors, cars, tubs and the timbering in the shafts to be in good condition. I noticed in the roof of the drift going west from shaft No. 3, a large boulder loose, which hung over the platform on which the shovelers were at work. I called this to the attention of the foreman, and he promised to take it down at once, and he has since informed me that he has taken it down and put the roof in good condition. I also noticed a loose slab of rock in the roof of the drift from shaft No. 4, and called attention to this, and the foreman promised to take it down at once. The ventilation was good in all of the mines. (Inspected by Brown.)

Jack Pot Mining Company.—This company operates a first lease on ten mining lots located in section 32, township 28, range 33, Jasper county. The land is owned in fee by the John Jackson Investment Company of Joplin. The mine is reached by a shaft 140 feet in depth. There is a concentrating mill on the lease with a daily capacity of 150 tons. Eighteen miners and eight top and mill men are employed. I made an inspection of this mine on November 19th and found top structures, hoisting machinery, cables, trap doors, tubs and the timbering in the shaft in good condition. The miners were engaged in cleaning up the old drifts preparatory to sinking the shaft into a deeper run of ore. The superintendent informed me that all the miners would be layed off with the exception of three, who would be retained to sink the shaft. The ventilation was fair. (Inspected by Brown.)

Jasper Mining Company.—This is a copartnership composed of J. C., F. and G. T. Warren and J. F. Brewster. J. C. Warren is superintendent and general manager of the company's mine. The company holds a sublease and operates eleven mining lots, each 200 feet square. The land is located in section 5, township 27, range 32, Jasper county. The Belmont Mining Company holds the first lease. The land is owned in fee by the Rex Mining and Smelting Company of Joplin. The mine is reached by a shaft 90 feet in depth. There are three drifts worked at this level, which average about 9 feet in height and about 28 feet in width. The dirt is hoisted by means of a steam hoist and is cleaned on a custom mill. Seven miners and four top men are employed. I made an inspection of this mine on September 21st and found all top structures, cables, trap doors, tubs and the timbering in mine and shaft to be in good condition. The ventilation, which is produced by a 36-inch fan is only fair, but Mr. Warren informed me that the company would sink an air shaft in the near future. (Inspected by Brown.)

Joplin-Kentucky Zinc Company.—This company is operating, under first lease, 18 acres of land located in section 32, township 28, range 33, Jasper county. The land is owned in fee by the John Jackson Investment Company of Joplin. The mine is reached by two shafts, 177 feet in depth. Two drifts are operated at this level, the faces of which are about fifty feet each way. There is one drift operated at the 100-foot level, where the dirt is shot through a hole to the bottom of the 177-foot drift, from where it is hoisted to the surface. There is a 125-ton concentrating mill on the lease. Fourteen miners and nine top and mill men are employed. I made an inspection of this mine on November 17th and found the top structures, hoisting machinery, cables, trap doors, tubs and the timbering in the shaft to be in good condition. I also found the underground conditions to be good, with the exception of the roof of the drift at the 100-foot level. The roof of this drift, near the face, is of a sheet flint formation and has been cut too wide for a sheet roof. I ordered the superintendent and foreman to shoot down this drift until it becomes arched. They both promised me to do this before miners will be allowed to work in the drift. (Inspected by Brown.)

Joplin-Kentucky Mining Co.—This company controls under first lease, and operates 18 acres of land owned in fee by the John Jackson Inv. Co. There is one mine on the lease entered by two connected shafts 175 feet in depth. Three drills are operated and 15 miners and 9 top and mill men employed. I made an inspection of this mine on May 19th, but the inspection was very unsatisfactory for the reason that, as steam is used to operate the drills, the mine was very murky and I was unable to see the roof and sides of the high drifts. Such of the drifts as I could examine were in good condition. Hoisting equipment and cables in good condition. I will be forced to return to this mine in the future to make complete inspection, timing my visit so as to arrive early in the morning before the machines have been started. (Inspected by Wallace.)

Kalitan Mining Company.—This company holds first lease and operates 20 acres of land, the fee of which is owned by the Spencer estate, of which J. H. and H. E. Dangerfield of Joplin are agents. The land is located in section 6, township 27, range 32, Jasper county. The mine is entered by two shafts, 84 feet in depth. There are two drifts worked from shaft No. 1, with an average height of 10 feet and an average width of 14 feet. There are also two drifts of the same dimensions from shaft No. 2. These drifts are all timbered. There is a concentrating mill on the property with a daily capacity of 100 tons. Sixteen miners and twelve top and mill men were employed at this mine. I made an inspection of this mine on August 26th and found all top structures, tubs, trap doors, hoisting machinery and the cable in shaft No. 2 in good condition, but the cable in shaft No. 1 had become badly worn. I called attention to this and ordered it replaced by a new one. I have since visited the mine and found a new cable installed. The timbering in mine and shaft was in good condition. The ventilation in shaft No. 2 was not satisfactory; however, the foreman is cutting a drift to connect the two shafts, and when this is completed it will give the mine a natural ventilation. (Inspected by Brown.)

Katherine Mining Company.—This company holds a first lease and operates 30 acres of land, [illegible] which is owned by the Mexico and Joplin

Land Company of Mexico, Missouri. The land is located in section 16, township 28, range 33, Jasper county. The mine is reached by a shaft 160 feet deep. There are five drifts from this shaft, with an average height of ten feet and an average width of ten feet. These drifts are all timbered. The company has a concentrating mill on its lease with a daily capacity of 100 tons. They employ 17 miners and 10 top and mill men. I made an inspection of this mine on August 31st and found all top structures, hoisting machinery, cables, trap doors, tubs and the timbering in mine and shaft to be in good condition. The ventilation is not satisfactory, it being produced by a 36-inch fan; however, there is a drift being driven to connect this mine with a shaft that is being sunk on this lease, and when completed this will give the mine a natural ventilation. (Inspected by Brown.)

King Edward Mining Company.—This company is operating on a 10 acre lease of the Guinn land, the first lease on which is owned by Sanford & McCroskey. There is one mine on the lease entered by two shafts, 150 feet deep, connected by drift. Three air drills are operated and 18 miners and 11 top and mill men employed. I examined this mine on August 18th and found same in good condition with the exception of some repairs being needed at the well hole in the north derrick, as mentioned in my report of accident to E. O. Bray. I directed that these repairs be made at once. The mine is very well pillared. (Inspected by Wallace.)

Kernohan, Pitkin & Brown.—This company controls a lease on ten acres of land in 21-28-32, Jasper county, owned by the Connor Realty Co. There is a concentrating plant of 150 tons capacity on the property. The mine is reached by two shafts 200 feet deep. The ore faces are from 30 feet to 35 feet high. Four drills are operated and 22 miners and 17 top and mill men employed. On date of inspection, July 17th, I found the hoist and cable in good condition. The shaft was rather rough—the cribbing being broken in several places. The mine is in fair condition, being well pillared with exception of one drift, which was too wide, and could with a little trimming be placed in good condition. I recommended that the shaft be repaired and the mine trimmed. This company has only recently come into possession of the mine and at time of inspection were just starting operations. (Inspected by Wallace.)

Second inspection. I again inspected this mine on October 12th and found that the shaft had not been repaired and that there was again some trimming needed. There was a bad place in the roof of No. 2 drift, caused by carrying the drift too high in looking for ore. Having been one of the parties that drilled the holes that discovered this mine, and also sunk the shaft, I knew that the ground was soft to the surface at this point and there was no good roof above, so I directed that this place be cut around. I also directed that a long ladder be furnished and the mine trimmed of all loose material. I informed the superintendent that the shaft must be repaired at once if they expected to operate the mine. Directed that hand rails be placed at the top of the shaft. Note: These recommendations were only partly complied with, but the mine was shut down shortly afterward. (Inspected by Wallace.)

King Jack Mine.—This mine is operated by E. S. Hunt, Mat. Smith and others of Joplin. These parties are operating under a sublease secured from

B. M. Robinson, the first lessee. The land is located in section 32, township 28, range 33, Jasper county, and is owned by the United Zinc Company of Joplin. The mine is entered by a shaft 147 feet deep and has two outlets. I made an inspection of this mine on December 8th and found the timbering in the shaft to be good. The hoisting machinery, cables and trap doors were in good condition. The company stores all powder in a powder house 100 feet from the shaft. The number of men employed on date of inspection was four miners and four top and mill men. One drift is operated from the shaft, which is 90 feet high, and as no ladder was in the mine I could not make an examination of the roof. I recommended that the miners be supplied with ladders, which the foreman promised to do. (Inspected by Brown.)

Kitty Mack Mining Company.—This company holds a sublease on 10 acres of the Charles Schifferdecker land in section 5, township 27, range 33, Jasper county. T. J. Sheridan of Joplin holds the first lease. The mine is reached through a shaft 175 feet deep. The ground is of a sheet formation and the drifts are cut about 20 feet wide and 17 feet high. There is a concentrating mill on the property with a daily capacity of 250 tons. Eighteen miners and ten top and mill men are employed. I made an inspection of this mine on October 20th and found all top structures, hoisting machinery, trap doors, cables and tubs to be new and in good condition. The ventilation was poor, but a new shaft was being sunk and when completed will give natural circulation of air. (Inspected by Brown.)

Kohinoor Zinc Company.—This company holds a first lease on 33 mining lots, but they have subleased 18 of these to the West End Mining Company and three to the Campbell Mining Company. At present they are only operating 10 lots. The land is located in sections 4 and 9, township 27, range 33, Jasper county. The land is owned in fee by the Continental Zinc Company of Joplin. The mine is entered by a shaft 185 feet in depth. There are three drifts worked at this level, which average 60 feet in height and 40 feet in width. There is a concentrating mill on the lease with a daily capacity of 150 tons. Fourteen miners and eight top and mill men are employed at this mine. I inspected this mine on September 21st and found all top structures, hoisting machinery, cables, trap doors and tubs in good condition. I found that the timbering in the shaft (shaft sunk 18 or 20 years ago) had become decayed and fallen out in many places. The superintendent informed me that the company was contemplating sinking this shaft to a lower level in the near future, and he said that he would retimber the shaft at once. This shaft is connected with other shafts by drift, giving the miners a means of escape and giving the mine a natural ventilation. Other conditions in and about the mine were satisfactory. (Inspected by Brown.)

Lee Hall Mine.—E. V. Matlock holds a first lease and operates 12 acres of land located in section 4, township 27, range 33, Jasper county. The land is owned in fee by E. H. Norton of Platte City. E. L. Anderson of Joplin is his agent. This mine is reached by two shafts, known as Nos. 1 and 2. Shaft No. 2 is 190 feet deep, and two drifts are operated from it, which will average about 40 feet square. Shaft No. 1 is 135 feet deep and is being sunk to a lower level. Mr. Matlock has a concentrating mill on this property with a daily capacity of 200 tons. There are 25 miners and 20 top and mill men employed at this mine. I made an inspection of this mine on August 10th and found all top structures, hoisting machinery, cables, trap doors, tubs and the timbering in the shafts to be in good condition, but the same cannot be said of the drifts, especially the west drift. The roof of this drift had caved in and the men were moving the caved dirt. I deemed it dangerous for them to work without the roof being trimmed of loose boulders and rock, which were hanging over the men who were at work. I called the attention of Chas. Wells, the superintendent, to this dangerous condition, and ordered that he have these loose boulders and slabs of rock taken down at once. (Inspected by Brown.)

L. H. 1906 Mine.—The L. H. 1906 Mining Company is operating this mine under sublease from the Rhea Lead and Zinc Company of Carterville. There are five acres of land controlled by this lease, located three-quarters of a mile northwest of Carterville and owned in fee by John C. Guinn. Two shafts are on this lease, having a depth of 165 feet and connected by drift. This mine has run steadily all through the period of low prices, and is a good producer. On date of inspection, March 6th, five air drills were in operation and 24 miners and 7 top and mill men were employed. I found the mine in good condition considering the formation. The roof is soft in places and inclined to slab and come down, but the management seems to be giving such places prompt attention, leaving sufficient pillars and placing props under loose slabs. The top of the shaft is wholly enclosed, and hand rails are provided, thus insuring safety for the men going down and coming up. A good magazine is provided for storage of powder on the surface, but the powder was being kept in a magazine in the ground, made by cutting a hole in a pillar and closing same with a door. Two lighted lanterns were used to thaw the powder. I had the surplus powder taken out at once and directed that only one day's supply be brought into the ground at a time. Also that the powder be thawed by steam in the magazine on the surface. Caps and fuse are kept in a separate magazine from the powder, and under strict orders no shots are prepared in the powder magazine. Sheet formation is now being worked, the faces averaging from 7 to 8 feet high. I again inspected this mine on May 20th in company with Mr. John Weaver, inspector for the Guinn land, upon which this mine is located. Found the mine in the same condition as at time of former inspection. No surplus powder in the grounds at this inspection.

I made a third inspection of this mine on October 23d and found the mine in fair condition, but the hoist cable was becoming badly worn and I directed that a new one be placed in use at once. (Inspected by Wallace.)

Lima Mine.—On August 3d and 5th I made inspection of the Lima Mine, located about two miles south of Carterville. This inspection was made at the request of McDonald Brothers of Carterville, who have recently acquired a lease on the property, and who, it seems, had been informed that the ground was in a dangerous condition. The Lima Mining Company controls a first lease on 20 acres of the Connor estate land, located in section 29, township 28 and range 32, Jasper county. Several months ago the concentrating plant on this property burned down, and since that time the mine has been idle. Recently E. F. and A. McDonald of Carterville secured a second lease on this 20 acres from the Lima Mining Company and commenced prospecting, with the end in view of erecting a new mill should developments in the ground justify it. There are several shafts on the land of depths varying from 125 feet to 250 feet. The former mill shaft being 250 feet deep, and having been worked on two levels, the deeper of which was at about 240 feet, where a blanket formation was encountered. The cap rock of the formation is very loose, disintegrated flint, full of mud seams and pockets, making a very poor roof. The mine shows evidences of having been cut in a very reckless manner, especially in the drifts west and northwest of the shaft. The ground here is much softer than on the east side of the shaft, the drifts at times following a soapstone bar. These drifts have been carried so high that in several places they have broken through into the drifts on the upper level, which had been abandoned and allowed to cave in, thus causing a run of caved material into the lower drifts. Much of the timbering on the west side was broken down, the caps having been too long for use without center posts. The mine as a whole is in poor condition and sadly in need of trimming and retimbering, but I believe that if given a thorough overhauling by competent men it can then be safely operated. I so informed McDonald Brothers, stating what improvements I should require before the mine could be placed in operation. Three men were at work prospecting. (Inspected by Wallace.)

Lincoln Mine.—The Lincoln Mining and Milling Company owns a first lease on 40 acres of land in section 3, township 27, range 32, Jasper county, the land being owned in fee by the Jasper County Royalty Company of Carthage. The plant and equipment are up-to-date in every respect, the concentrating plant being of 300 tons daily capacity. There are two shafts, 254 feet and 240 feet deep, respectively. These shafts are not as yet connected, but an air drift is being driven by double shift. Only three air drills are operated at present, as the ground is not opened up sufficiently to give room for more. Twelve miners are employed on day shift and two on night shift. Eleven top and mill men are employed. At the time of my inspection, July 30th, I found the hoists, cables, trap doors, timbering in shaft and the interior of the mine in excellent condition. The circulation of air in the mine was not good, but every effort is being made to better this condition by the completion of the drift connecting the two shafts. Sheet ground is being mined and the roof so far exposed seems to be good. The pillars so far left are sufficiently close for safety. I visited this mine again on October 6th and found that the ventilation had been somewhat improved by the installation of a No. 4 Buffalo blower over a drill hole near the mill shaft. The mine has been shut down for some weeks in the interval since my last inspection and the air drift is not yet completed, but, as three eight hour shifts are now at work on it, connection should be made inside of three weeks. (Inspected by Wallace.)

Little Jew Mine.—This mine is operated by the Little Jew Mining Company under sublease from C. W. Edwards and others, first lessees. The mine is located in section 9, township 27, range 33, and the land is owned by E. O. Bartlett. The operating company controls 20 acres, and has two shafts, with an average depth of 135 feet on this tract. I examined this mine on December 9th and found the shaft timbering to be good. The steam hoist and cables were in good order and the ventilation in the mine was provided by natural means and was good. The company's supply of powder is stored in a powder house about 200 feet from the shaft, and only about 50 pounds is kept under ground. Two air drills were operated on date of inspection and five miners and four top and mill men were employed. A 100-ton concentrating mill is on the lease. (Inspected by Brown.)

Little Persimmon Mining Co.—This company is operating on a 26-acre lease on the Buehler land, southeast of Carthage, on which Frank Williams & Co. own the first lease. The mine is equipped with a 150-ton concentrating plant. There are two shafts on the lease 195 feet and 95 feet in depth, but only one shaft is operated. Good ventilation is secured by connection with the drifts of the old O'Neill mine on the Carter land, adjoining. Three drills are operated and 12 miners and 8 top and mill men are employed. Ore occurs in a disseminated formation. On date of inspection, September 24th, I found the mine and equipment in fairly good condition. My recommendations were that the cribbing at the bottom of the shaft be repaired so that no rocks could fall to the bottom of the shaft; that the drifts be kept narrow, as they are now driven, and that an extension ladder be furnished for use in trimming. (Inspected by Wallace.)

Litttle Princess Mining Co. is operating on a ten-acre first lease of the Wear, Bowman & Scott land, being a part of section 12, township 28, range 33, Jasper county, and located north of Webb City. I examined this mine on April 16th. There are two shafts on the lease, averaging 200 feet in depth, but only one shaft is at present used for hoisting. Forty miners and 12 top and mill men are employed. The working places were in fair condition with exception of some drifts which had been cut too wide. I notified them not to cut the ground over forty feet between pillars. (Inspected by Wallace.)

Second inspection. I again inspected this mine on October 18th and found conditions much the same as at former inspection. Some of the drifts had been drawn in narrower, but there were several which were still too wide. I entered emphatic protest against cutting the ground so wide and warned the superintendent not to permit it in future. I recommended that several pieces of loose roof be taken down and that posts be placed under the edge of a slab, between pillars. (Inspected by Wallace.)

Long Mining Company.—The land controlled by this company is located in the southeast quarter of the southeast quarter of section 33, township 28, range 33, Jasper county, and consists of 15 acres leased from Connor and Roberts. On this property there is one concentrating plant of a capacity of 150 tons daily. This mine is reached by two shafts 155 feet deep and connected by drift, giving the mine good ventilation. There are four drifts worked with an average height of 40 feet and 30 feet wide. Four air drills are operated and 18 miners and 10 top and mill men are employed. Mr. Hackett tells me that without exception the same men have been employed for the past three years. This is so exceptional that I make note of it in this report. On August 2d I made inspection of this mine and found the hoisting machinery, cables, trap doors, shafts and drifts in good condition. (Inspected by Brown.)

Louise T. Mine.—This mine is owned and operated by the Federated Mines and Milling Company. The land embraces 10 mining lots located in section 36, township 28, range 34, Jasper county, and is owned in fee by the Geneva Land and Mining Company of Webb City. The company has a concentrating mill on its lease with a daily capacity of 100 tons. The mine is reached by a shaft 160 feet in depth, and is connected by drift with an air shaft. Six miners and six top and mill men are employed at this mine. I made an inspection of this mine on September 14th and found the top structures, hoisting machinery, cables, tubs and the timbering in mine and shaft to be in good condition, but on investigation I found that the timbers in the air drift were broken down and that the air was almost shut off. I called the attention of the superintendent to this, and he promised to reopen the drift. At this time the company was sinking a shaft preparatory to taking up a 10-foot stope in the old workings. (Inspected by Brown.)

Louisville Lead and Zinc Company.—This company controls under sublease, and operates on 26 acres of land located in section 5, township 27, range 33, Jasper county. The landowner is C. S. Glover of Joplin. The mine is entered by a shaft 204 feet in depth. There are five drifts operated at this level, which are about 14 feet in height and about 30 feet between pillars. The operating company has a concentrating mill upon the property with a daily capacity of 250 tons. Thirty miners and sixteen top and mill men are employed at this mine. I made an inspection of the mine on September 15th. All top structures, hoisting machinery, cables, trap doors and tubs are new and in good condition. I also found the shafts and drifts in good condition. The ventilation is produced by a 36-inch fan, and it was far from being satisfactory. However, the company is sinking an air shaft, which is down 160 feet. I recommended that they drive drifts from the old workings and from the new shaft to connect them, so as to get good air as soon as possible. This they promised to do. (Inspected by Brown.)

Louis W. Mine, operated by the Elking Lead and Zinc Company of Webb City under a sublease from A. M. Wagner and W. T. Bartlett, who hold the first lease from Ware, Bowman and Scott on 20 acres in section 12, township 28, range 33, lying north of Webb City. Three shafts are on the lease but only two are in operation. This inspection covers only No. 3 (the west) shaft and the workings operated from same. I did not find conditions satisfactory in that there was lack of proper ventilation; the ground had been cut too wide in some drifts, and some timbers were needed under loose roof in one drift. The lack of ventilation can be overcome by drift connection with the workings from No. 1 shaft. A contract for this work was let on the afternoon of the day of my visit and a good circulation of air will be secured long before the hot weather sets in. When I spoke to Mr. Maness, the superintendent about the timbers, he informed me that the need had already been recognized by himself and the ground foreman and that the timbers had been ordered—it not being customary to keep timbers on hand at sheet ground mines unless the roof is very soft—and would be put in place as soon as they arrived. I notified them that in future the pillars must be left closer.

This mine is equipped with a fine large mill. On the day of inspection 42 miners and 24 top and mill men were employed.

I visited this mine on May 17th, 1909. and found that the air drift had been completed on May 15th. (Inspected by Wallace.)

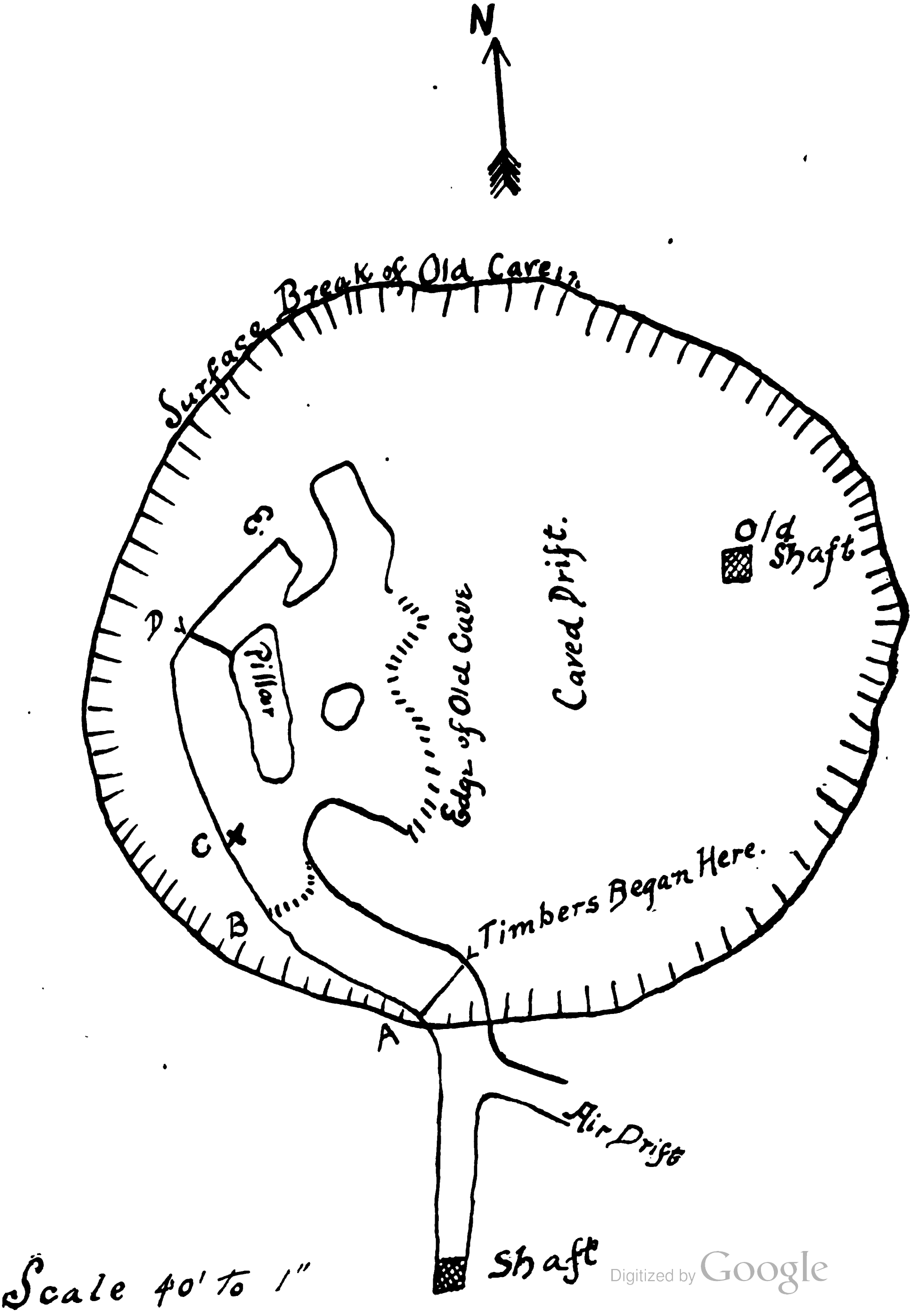
Lounetta Mining Company.—This company holds a first lease on 15 acres of land, the fee of which is owned by the Granby Mining and Smelting Company. The land is located in section 33, township 28, range 33, Jasper county. The company operates one mine on its lease reached by two shafts, the average depth being 122 feet. There is one concentrating mill on this property with a daily capacity of 100 tons; there is also one steam drill operated. Four miners and six top and mill men are employed here. On August 6th I made an inspection of this mine and found all top structures, machinery, cables, tubs, trap doors, etc., in good order. The underground conditions, including timbering in shaft, safety and ventilation, were satisfactory. (Inspected by Brown.)

Lucky Budge Mine.—This mine is operated by the Lucky Budge Mining Company of Carterville. The company holds a first lease on 23 acres of land located one and a half miles south of Carterville, in section 21, township 28, range 32. Three shafts are sunk on the land, with an average depth of 180 feet. The buildings and equipment are in excellent condition. On date of inspection, March 11th, the ground was in fair shape, although there were several pillars that needed trimming and some soft places in the roof that should be closely watched. I made my recommendations to Mr. Graham, the superintendent, accordingly, and he promised that my instructions would be complied with immediately. Sheet ground is now being worked at this mine, the faces averaging from 15 to 18 feet high. (Inspected by Wallace.)

I made second inspection of this mine on November 11th and found the top structures, hoisting equipment, etc., in good condition, but I can not say that I was pleased with the looks of things underground. In the south drifts a deposit of soapstone seems to generally overlie the ore bearing ground and in several places the drifts have been carried so high that they have tapped this soapstone. In one drift all of the flint had been shot out of the roof, leaving a selvage and soapstone roof some 35 feet to 40 feet wide. I directed that pillars be left at once, supporting this place as well as possible; that this drift be cut around and the tracks be taken out so as to avoid this bad place, and that in future several feet of flint be left in the roof. I also recommended closer trimming of the ground generally.

At the north shaft operations were confined to pulling caved ground from the caved drifts formerly cut by the Budge No. 2 mine. Narrow drifts were driven in under the floor of the old drifts, holes shot up through this floor and the dirt allowed to roll down. The runway drifts being narrow and the floor thick enough to insure safety, I had no complaint to make here. 35 miners and 10 top and mill men were employed. (Inspected by Wallace.)

M. and B. No. 2 Mining Company.—This mine is owned by F. L. Francis, Robert C. Dennison, Bert Winsett and Thomas Gibbs (estate), all of Duenweg, Missouri. The lease comprises four acres of the Chase land, located in section 4, township 27, range 32. One shaft, about 200 feet deep, is in operation, the workings being on the 160-foot level. On Thursday, April 22d, I was notified by 'phone of an accident that had occurred at this mine, resulting in the instant death of George Bennett and C. E. Evans and fatal injuries to Thomas Gibbs, who died shortly after the accident. I went at once to the scene of the accident and rendered all the assistance in my power in the rescue work. As soon as the news of the cave-in was passed around, men flocked from mines nearby to the aid of their fellows, and, at the time of my arrival, a well organized force, under the leadership of Harvey Thompson, was working with might and main to rescue Gibbs, who was caught under the mass of fallen timbers and cave dirt. In order to convey a better understanding of my report of the cave-in at this mine, I have attached a rough sketch of the drifts cut by the present operators. Up to the point C this sketch is fairly accurate, but beyond that point it is made entirely from descriptions given by men who had worked in this ground. It is now impossible



to verify these descriptions, as the ground is completely down. The large cave-in was caused by the breaking down of drifts cut by the Loraine Mining Company some years ago. The present operators were cutting along the edge of this old cave-in at the 160-foot level. Upon inspection I found that the drift had originally been cut without timbers from the shaft to about point C, somewhat beyond where the men were killed, where the soft ground was encountered. This part of the drift was afterward timbered with "snowshed" timbers—that is, the posts, caps and stringers were set in place, but the sets were not wooded up to the roof and keyed, and not securely braced, the intention being merely to give protection from small rocks that might fall from the roof, and not to support the ground. This drift is from 12 to 18 feet high and from 12 to 15 feet in width (from A to C). The drift over the snowshed timbers did not cave in, but when the drifts further on, to the north and east, caved in, the snowsheds were knocked down (as far as the dotted line B) by the rush of the caving dirt and boulders. This was evident from the position in which the timbers were lying and from the fact that none of them at this point were broken. The men were caught and crushed by the falling timbers. Gibbs was lying at about the point C and the other two men between B and C. That Gibbs was not instantly killed is due to the fact that the timbers, in falling, were locked above him and rested against the solid wall on the west in such a way that he was to some extent protected. The timbers in sight were all good heavy timbers, averaging in diameter from 12 to 18 inches, and I am informed by C. E. Ingraham, the dealer who sold the timbers to this company, that they always purchased the best that could be obtained. The testimony of witnesses at the inquest developed that the ground had been settling and the timbers taking weight for several days prior to the accident, and that on the morning of the 22d (the accident occurred at about 1:15 p. m.), just before going out at noon, a cap (stull) had been noticed at point D that was breaking. It was intended to place a false post under this cap for additional support, and measurement was taken for same. Upon returning to the ground after the noon meal, the cap was noticed to have settled still further, and the post, which had been cut to measure, was found to be some six inches too long. Part of the men were sawing off the end of this post and the others were standing further back toward the shaft when the crash came. The men who were killed were running toward the shaft when caught by the falling timbers. In my opinion, every man would have escaped if the timbers in the drift from A to C had been wooded up to the roof, keyed and wall braced; but be that as it may, the warnings given by the ground in settling should have been heeded and work suspended until it was seen just what was going to happen. The rescue work was pushed with all possible speed throughout the night, but it was slow work at best, being hindered by fresh runs of caved dirt and boulders that occurred from time to time, and it being necessary to drive a small timbered drift through the mass of caved dirt and fallen timbers. Too much cannot be said in praise of the bravery and self-sacrifice of the miners in the rescue party. Gibbs was taken out alive about 7:30 the morning of the 23d, but died soon after he was brought on top. Mr. Gibbs was superintendent of the mine and bore the reputation of being an excellent "soft-ground" miner, having had much experience in timbering ground.

Second Inspection.—On Monday, May 3d, F. L. Francis notified me that he and his partners intended to start up the M. and B. Mine No. 2, and asked me to come out and make such suggestions as I might deem necessary for the safe operation of the mine. I found the ground in the same condition in which we left it on the morning of April 23d; nothing more had fallen, and it seemed to be through settling. It being their intention to start a new drift in a westerly direction at about point B, I recommended that the original drift from point A, where the timbers began, be retimbered to the point C; that the sets be wooded up solid to the roof and keyed, collar-braced and spragged; that side logs be placed between the posts and the wall on each side. Also, requested them to purchase and place in use at once a new hoisting cable, as the old one was much worn and many of the wires broken. This the operators promised to do. Upon leaving I asked them to notify me when the work of retimbering was completed and the drift cleaned up to the point C, as I wished then to make further inspection of the ground.

Third Inspection.—On Wednesday, May 5th, the owners of M. and B. Mine No. 2 notified me, as per my request, that they had retimbered the drift as far as point C. I visited the mine in the afternoon of that day and found that my recommendations had been complied with to the letter. A new cable had been placed in use and the retimbering had been done in a very miner-like manner. The new drift had been started at about the point B. I further recommended that the old drift be blocked off at the point C and the last sets braced against the ground in case any pressure should come upon them from the caved material. I forbade any further work in the broken down ground. (Inspected by Wallace.)

I returned to this mine on August 30th with Inspector Brown and, assisted by him, made another inspection. Since my last visit the mine has been leased by C. C. Hume & Co., consisting of C. C. Hume, Geo. Hampton, Hugh Bass, F. Lewis and Thos. Mory, who are now operating it. After a thorough inspection of the mine Mr. Brown and I decided that it was in a dangerous condition and should not be further worked at that level. With the exception of two shovelers all of the men working in the ground were interested in the lease and could exercise their own judgment and option as to where they worked, so I confined myself to a written notice to the operators, as follows:

M. & B. No. 2 Mining Co., Chas. C. Hume, Lessee and Supt., Webb City,
Missouri:

Dear Sir:—Following the inspection of your ground made this morning by Mr. Brown and myself, I wish to call your attention to the dangerous condition of said ground. I do not consider it a safe place in which to work men and I hereby notify you not to employ men to work therein.

Very truly yours,
CHAS. P. WALLACE,
Inspector Western District.

M. and S. Mine.—This mine is operated by the Federated Mines and Milling Company of Joplin. The mine is located on land owned by the company in the Prosperity district, comprising 10 acres situated in section 28, township 28, range 32. The company has two shafts on the tract, the shafts being 200 feet deep, and on date of inspection lacked but 15 feet of being connected by drift. There is also a shaft on the Arkansas lease which is connected with the M. and S. workings. I made a thorough examination of this mine on March 9th and found everything in excellent condition, the roof being hard and smooth and plenty of pillars left to support it. The ventilation is good and will be even better when the two shafts are connected. The company is now working in sheet ground formation, the faces being from 15 to 20 feet high. On day I visited the mine five air drills were being operated and 21 miners and 11 top and mill men were at work. The powder supply is stored in steam-heated magazine on top, and only enough for one day's use is taken under ground. The company recently installed an 85-horse power gas engine to drive the mill. (Inspected by Wallace.)

On September 15th I again visited this mine and found it in very good condition as before. The only recommendation that I made was that guard rails be placed protecting compressor piston and drive belt to gas engine. This was done.

The roof is becoming quite a little softer in the southwest drifts, but the pillars are set close and I do not anticipate any trouble there. (Inspected by Wallace.)

Mammoth Z. and L. Works.—This company owns in fee 40 acres in 29-28-32, Jasper county. There is one mine on the land equipped with a fine large concentrating plant. Sheet ground is being mined, access to the workings being had by means of two shafts, 225 feet and 235 feet deep. These shafts are connected by an air drift and the ventilation is satisfactory. Nine air drills are operated and 40 miners and 13 top and mill men employed. On date of inspection, September 8th, I found the top structures, hoists and cables in good condition. The mine is also in good condition, taking into consideration the difficult nature of the formation to be handled. There are large sand holes, or soft places, in the roof, and when one of these is encountered the only thing that can be done is to leave pillars around it and then trim it out until all loose material is down. Sometimes these places cause a slab which has to be taken down or timbered. The mine is being carefully handled. In driving the first drifts from the mill shaft the ground was cut too wide, but the danger of this was shown by the fall of a large slab, and pillars are now being left very close. (Inspected by Wallace.)

Martini Mining Company.—This company operates a first lease on 40 acres of land located in section 6, township 27, range 33, Jasper county. The land is owned in fee by James Luke and others of Carthage. The mine is entered by a shaft 104 feet deep. The ground is of a sheet formation and the drifts are about 16 feet high and about 30 feet between pillars. There is a concentrating plant on the property with a daily capacity of 250 tons. Twenty-seven miners and fourteen top and mill men are employed. I made an inspection of this mine on August 17th and found all top structures, hoisting machinery, cables, tubs, trap doors and the timbering in the shaft to be in good condition. I found that the roofs of the drifts had not been properly trimmed, as several loose slabs had been left in the roof. I called the superintendent's attention to this neglect, and recommended that he give the roof a thorough trimming and remove all slabs. He promised to do this at once. The ventilation was only fair, being produced by a blower set over a drill hole.

The company had sunk an air shaft, but had not as yet connected it with the mine. The superintendent assured me that he would drive a drift to the air shaft at once.

I visited this mine again on October 19th and found that my recommendations had been carried out. The slab had been taken down and that part of the mine put in good condition, but I found that on the opposite side of the mine a large slab was loose in the roof. I ordered the foreman to take this down and to withdraw the miners from the drift until it was put in safe condition. He did this before I left the ground. I also found that the drifts were cut much too wide between pillars. I notified the foreman that in future he must not cut the ground any wider than 30 feet between the pillars. I found that the company had made drift connections with the air shaft, which greatly improved the ventilation. (Inspected by Brown.)

McGee Mining Company.—This is a copartnership composed of R. McGee, H. A. Bell and J. H. Crugs. R. McGee is superintendent and manager. The company operates a sublease of 10 acres of land located in section 10, township 27, range 32, Jasper county. The first lease is held by the Home Talent Mining Company. The land is owned in fee by the Elam Hall heirs, of which L. G. Knight of Joplin is administrator. The mine is reached by two shafts, 100 feet in depth. The dirt is hoisted by means of a steam hoist and is cleaned on a 75-ton concentrating mill. Ten miners and nine top and mill men are employed. I made an inspection of this mine on November 19th and I found all top structures, hoisting machinery, cables, top cars and tubs in good condition. The shafts are about 50 feet apart and are connected by drift. There is a drift running north from the north shaft, which is about 200 feet long. There is also a drift running south from the south shaft, which is about 150 feet in length. The ground is of a soft mud and boulder formation, and must be held to the surface on timbers. The timbering, at the time of the inspection, was good. The ground has settled until it has pulled the south shaft considerably, and it will soon become dangerous. I so informed the superintendent, and ordered him to sink two new shafts at once, one near the face of the north drift and the other near the face of the south drift. He promised to begin these shafts by the 24th of the month. The ventilation was good. (Inspected by Brown.)

Mead Mining Company.—This is a copartnership composed of O. E. Mead, George Foust, Robert DePriest and Rufus DePriest, all of Joplin. The company operates a sublease of four mining lots on the Hemphill Mining Company's first lease. The land is owned in fee by the Montgomery Lead and Zinc Company, of which Lee Taylor of Joplin is agent. The land is located in section 27, township 28, range 33, Jasper county. The mine is reached by a shaft 70 feet in depth. There is a large cave-in on either side of the shaft extending to the surface and within 20 feet of the top of the shaft, and connected by drift at the 70-foot level. The miners work by daylight at the bottom of these caves. The dirt is hoisted by means of horse power, and is cleaned on a concentrating mill owned and operated by the first lessees. Only two miners and one top man were employed on the date of this inspection, owing to a caving of the ground some time before. I made an inspection of this mine on October 27th and found the hoisting machinery and cable to be in very bad condition. I also found the shaft and ground to be in a very dangerous condition. The ventilation was good. I notified the operators not to work any men in this ground, as I considered it dangerous. (Inspected by Brown.)

Meadville Mine.—The Meadville Mining Company of Carterville holds a sublease from the Rhea Lead and Zinc Company on 15 acres of land owned by John C. Guinn and located in section 8, township 28, range 32, three-quarters of a mile northwest of Carterville. Two shafts are on the lease, one is 145 feet deep, and the other is 185 feet deep. The operators recently erected a 400-ton mill over shaft No. 1. This mill the company moved from a former location near Porto Rico, erecting it upon this lease for a half interest, the owners of the lease becoming stockholders in the corporation. The company has also built a tramway 300 feet long, connecting the mill with shaft No. 2. No mining has been done as yet. As soon as the workings are sufficiently opened up a large force of men will be employed. (Inspected March 8th by Wallace.)

I made second inspection of this mine on October 2, 1909. At this time the mine was not in operation and no men were employed, but the operators were intending to start work in the near future. I entered the mine from the Smith mine through an air drift which had been driven to connect with the workings of the Smith mine. I found the mine in fair condition with the exception of some timbers being needed in the north and northwest drifts and the cable being well worn. Upon speaking to the management in regard to the timbers and a new cable, I was assured that the betterments would be made as soon as the mine resumed operations. (Inspected by Wallace.)

Mercantile M. and M. Co.—This company is operating on 40 acres of land in 8-28-32, the land being owned in fee by John C. Guinn. There are two mines on the lease, reached by four shafts averaging 165 feet to 175 feet in depth. There are two well equipped concentrating plants with a daily capacity of about 500 tons. At No. 1 mine 8 drills are operated and 40 miners and 12 top and mill men employed; at No. 5 mine 7 drills are operated and 35 miners and 12 top and mill men employed. Thos. Douglas is manager and J. J. Anderson, superintendent.

I inspected these mines on May 24th. The top structures, hoists and cables were in good condition and the mine in good condition considering the formation to be handled. There is some very bad roof in parts of these mines, but such places seem to be receiving close attention. Some of the drifts in the old workings have been cut too wide, but in the present workings the pillars are being set closer and are larger in size. (Inspected by Wallace.)

Mercedes Mining Company.—(No. 2 shaft.) This mine is located on the Centre Creek Mining Company land, located in section 17, township 28, range 32, lying between Webb City and Carterville. The Mercedes Mining Company hold under lease 40 acres of this famous tract of land, and while this inspection, made on March 10th, covers only the ground operated by the Mercedes Mining Company, there are several sublessees (small operators and renters) working under them upon other parts of the lease. Some of the ground on this lease has been worked for years, several stopes having been taken up, leaving a high roof or back. I find the new drifts being cut by this company in good condition. Two drill men and one shoveler were working in an old drift connecting with shaft No. 2, taking up the butt of an old stope. In this drift the floor between the upper and lower levels had fallen or been shot out, leaving an opening about 75 or 80 feet high directly above where the men were working. At some previous time several large boulders had fallen at this place, and at the time of this inspection fine material was sifting down, known as "spitting." I considered this place dangerous, and so informed the manager, Mr. Cape. He agreed to abandon work in this part of the ground and to take the men out immediately, which was done. The mill and all equipments are in good condition. The company built a new shaft head and hopper at shaft No. 2, and also constructed a tramway 300 feet long, connecting same with the mill. On day I visited the mine 19 miners and 14 top and mill men were at work. (Inspected by Wallace.)

Mercedes Mining Co.—(No. 1 Shaft) I inspected this mine, which is not connected with the workings from No. 2 shaft, although operated by the same company, on September 7th, 1909. The drifts are high but are not cut overly wide and the pillars are large and well placed. The principal need for the safety of the mine is frequent and careful trimming. I noticed several small pieces of loose material in the arch of a drift which was being raised, to the right of the shaft, and requested that they be taken down at once. I notified Mr. Cape to give especial attention to the trimming of the mine. (Inspected by Wallace.)

Midnight Mining Company.—This is a Missouri corporation, of which Dr. George E. Ladd of Joplin is president and general manager. The company holds under first lease, and operates 10 acres of land, the fee of whch is owned by the Belleville Land and Mining Company of Joplin. The land is located in section 25, township 28, range 34, Jasper county. The mine is reached by a shaft 140 feet in depth. There are five drifts worked at this level, with an average height of 10 feet and average width of 12 feet. The ground is of a soft boulder formation, and requires close timbering. There is a concentrating mill on the lease with a daily capacity of 150 tons. Seventeen miners and ten top and mill men are employed at this mine. I made an inspection of this mine on November 2d and found the hoisting machinery, cables, top cars and the timbering in the shaft and mine to be in good condition. I found that in case the shaft should cave or the top structures burn, there would be no way of escape for the miners. I recommended to the foreman, R. L. King, that he connect these drifts with the upper level, which is connected with the mill shaft. This would afford an escape for the miners and would also improve the ventilation. Mr. King promised to connect the workings at once. (Inspected by Brown.)

Mignonette Mining Co.—This company is operating on 24 acres which it owns in fee, the land being located about 4 miles northwest of Carthage. A concentrating plant of large capacity has just been erected on the land and at present is operating on tailings, from the tailing pile of the old mill, while the ground is being opened up at the east shaft. There are three shafts 200 feet, 220 feet and 230 feet deep on the land, but only one is now operated. Four miners and 18 top and mill men are employed. The workings at the east shaft have connection with the drifts of the Davey Crockett mine. I inspected this mine on October 29th and found everything in and about the mine in good condition. The formation is soft and timbers are used. Mr. J. L. Edwards is the manager. (Inspected by Wallace.)

Miners Milling Co.—This is a co-partnership composed of A. W. Canada, of Joplin, and F. B. Mosier, H. D. Hoge, T. N. Setser and J. T. Harper, of Carterville, who are operating a mine on the Ground & Irwin land at Porto Rico. The concentrating plant and a part of the land is leased from the Millard Mining Co.; the balance of the land is leased direct from the owners of the fee. Twenty miners and nine top and mill men are employed. I inspected this mine May 27th.

In the southwest drifts the roof is soft and inclined to slab. The extreme left drift had tapped the old cave-in of the Egyptian workings and, as the roof in this drift showed signs of giving down, I directed that the drift be abandoned and cut around. I noticed several small pieces of loose roof in different parts of the mine and one large slab in the west drift. I gave directions that this loose roof be taken down and the mine given a thorough trimming, asking them to notify me when same had been done. Recommended that a man be employed to trim roof. On June 16th I received the following written notification that my recommendations had been complied with:

Mr. C. P. Wallace, Mine Inspector, City:

Dear Sir: This letter is to inform you that the defects at our plant, which you ordered remedied at once, have been attended to in accordance with your instructions. Yours truly,

MINERS MILLING COMPANY,
H. D. HOGE.

(Inspected by Wallace.)

Minor Heir Mining Co.—This company is operating, under sub-lease from the Ben Nevis Mining Co. the old Ben Nevis mine and 12-acre lease on the Baker land in 6-28-32, Jasper county. This mine has been idle for some time and was only recently re-opened by this company. The mine is reached by two shafts 140 feet deep and connected by drift. Seven drills are operated and 30 miners and 10 top and mill men employed. Sheet ground is being mined with faces about 8 feet or 9 feet high. On date of inspection, November 12th, the top structures, hoist and cable were in good condition, but the same can not be said of the mine. The roof was good in this mine, but it was abused by cutting the ground too wide and now slabs are giving down in several places—most notably in the drifts north of the mill shaft—and one slab has fallen. I directed that two pens be built in the drift north of the mill shaft and that the tracks be moved from east of the line pillars, in the north ground, to the drift west of the pillars on account of a slab showing loose in the roof of the drift east of the pillars. The operators promised to do this at once. (Inspected by Wallace.)

Moark-Nemo Mining Co.—This company is operating on a lease in 7-28-32, Jasper county, the fee of which is owned by John C. Guinn. There are two shafts on the lease and practically two mines, the workings are connected for some distance; one mine being called the Moark and the other the Nemo. Two fine large mills concentrate the ore from these mines. The mills being so constructed that the engine-room is between them, and under one roof. Gas engines are used to drive the mills and the air compressor and everything about the plants is first-class and up-to-date. On date of inspection, May 27th, the mines and equipment were found to be in good condition with exceptions as noted: Broken cribbing in the south shaft, at a point about half way down, and several drifts in the mine which had been cut too wide. In the east drifts a soft seam had been encountered and the roof showed signs of slabbing. Some posts had been placed here, but I did not consider them sufficient protection and directed that two pens be built, giving the company written notice, as follows:

Carterville, Mo. June 1, 1909.

Moark-Nemo Mining Co., Joplin, Mo.:

Gentlemen.—In an inspection of your mine in section 7, township 28 and range 32, Jasper county, Missouri, on May 27th, 1909, I find that some parts of same have been cut much too wide for safety—pillars not having been left sufficinetly close together. I also find that there is some broken cribbing in the south shaft at a point about half way down.

I recommend that two pens be built at points located by me for Mr. Hampton, your ground foreman, and that the broken cribbing be taken out and replaced by new.

These pens should be built of squared timbers, of good size and quality, filled with waste boulders as high as possible and keyed tightly to the roof.

In future, cutting of the ground pillars should be left at a distance of not over forty feet apart, and closer if the condition of the drifts warrant it.

Kindly notify me in writing when the above mentioned betterments have been made.

Respectfully yours,

CHAS. P. WALLACE,

Inspector Western District.

Second Inspection.—On June 10th I received written notification from this company that my recommendations had been complied with and that the improvements were ready for inspection.

June 9, 1909.

Mr. Chas. P. Wallace, Carterville, Mo.:

Dear Sir.—In reply to yours of the 1st inst., would say that we have the cribbing of the south shaft of the "Moark-Nemo Mine" in place and have also built the pens requested by you and they are now ready for inspection.

Yours very truly,

BENDELARI & COOK.

By A. E. Bendelari.

I visited the mine the same day for the purpose of examining the pens and the new cribbing in the south shaft. I found the improvements to be satisfactory. (Inspected by Wallace.)

Moler-Smith Mining Co.—This company is operating on 132 acres of land, near Carl Junction, in Jasper county, 40 acres of which is owned by the Smith heirs and 92 acres by the Royal L. & Z. Co. There is one large concentrating plant in operation on the property and a second is in course of construction. The scene of the operations on this lease is in the old bed of Center Creek—the creek having been turned into a new channel by a system of levees. Years ago some of the richest shallow mines ever discovered in this district were worked at this point and quite a large camp sprang into existence, which was known as Lehigh. The Moler-Smith Co. is working in the cave-in caused by the subsidence of the old drifts. The ground being soft, the dirt is shoveled into cars with a steam shovel and is then hoisted up an inclined tramway into the hopper at the mill. The mining and milling cost is low and comparatively lean dirt can be handled at a profit. The men in entering and leaving the open pit walk up a path. On date of inspection, March 1st, I could see no danger in the work other than that the sides of the pit where the shovel was working might be undercut too far and a slide of the bank result. I cautioned the superintendent, Mr. Geo. Howard, to keep sufficient slope to the sides by shooting the top when the sides became too steep. Thirty pit men and 14 top and mill men are employed. (Inspected by Wallace.)

Second Inspection.—I again inspected this property on June 21st and found conditions satisfactory with exception of one point where the bank was too steep. I directed that the top be shot down at once. (Inspected by Wallace.)

Monitor Mining Company.—This company holds under first lease 10 acres of the Granby land, located in section 4, township 28, range 33, Jasper county. There are two shafts operated by this company. The mill shaft is operated at the 100-foot level, there being but one drift from this shaft, having an average height of 15 feet. Shaft No. 2 is worked on the 145-foot level. There are two drifts from this shaft, with an average height of 30 feet. Three air drills are operated at this mine. The dirt is hoisted by means of two steam hoisters and is cleaned on a 150-ton concentrating mill. Ventilation is produced by two 36-inch fans, and is not satisfactory. However, a drift is being driven to connect the two workings, and when completed, will result in good and sufficient ventilation. I made a thorough inspection of this mine on July 29th and found all of the top structures, hoisting machinery, cables, tubs, trap doors and timbering in shaft in good condition. I noticed a loose slab in the roof of the north drift from shaft No. 2, and had it taken down at once. (Inspected by Brown.)

Morgan 40 Mine.—This mine is located on 40 acres of land owned by the Center Creek Mining Company, lying in section 17, township 28, range 32, near Carterville. The land is held under a first lease by S. Y. Ramage, and is subleased to J. O. D. Rogers and Company of Carterville. Two shafts are on the lease, connected by drift. I inspected this mine on March 6th and found same in good condition in the parts being worked by the present operators, experienced and practical men. Some of the ground cut by the former operating companies is not in safe condition. Sufficient pillars to support the roof were not left, and loose slabs have developed. These slabs have been supported by props in some places, but I do not consider them safe. No men are being worked in this part of the ground, however, and the foreman assured me that all of these slabs would be taken down before tracks were laid in this part of the ground. Sheet ground formation is being worked in this mine, the ore faces averaging 10 feet in height. (Inspected by Wallace.)

Second Inspection.—This property was under lease to J. O. D. Rogers and Company during the greater part of 1909. Their lease having recently expired, the mine was taken back by Mr. Ramage. At the time this inspection was made, December 28th, the mine was being overhauled and placed in good condition by the new foreman, John Wenk. No dirt was being hoisted and only about half of the full crew were at work—these men being mostly engaged in laying track and making repairs. (Inspected by Wallace.)

Morse Mining Company.—This is a copartnership composed of E. Morse, W. Porter and Chas. Hughes. E. Morse is manager. The company holds under sublease, and operates five and a half mining lots located in section 4, township 27, range 33, Jasper county. The first lessee is the Old Dominion Mining Company, and the land owner is Mrs. Lula Taylor, both of Joplin. The mine is entered by two shafts, one known as the north shaft and the other as the south shaft. The north shaft is 135 feet in depth. There are three drifts operated at this shaft at the 135-foot level; one is about 12 feet in height and about 10 feet wide; another is about 30 feet in height and 20 feet in width, and the third is about 75 feet in height and about 75 feet in width. The south shaft is also operated at the 135-foot level. There are four drifts operated at this shaft, and they all average about 16 feet square. Eighteen miners and eight top men are employed at this mine. The dirt from this mine is cleaned on a 150-ton mill, which is owned and operated by the first lessees, who employ four mill men. I made an inspection of this mine on October 9th and found all top structures, hoisting machinery, cables, trap doors and top cars to be in good condition. The tubs were in a very bad condition. I called Mr. Morse's attention to this, and he promised to replace them with new tubs at once. This ground is of a boulder formation, and believing that the 75-foot room is dangerous for the miners to pass through, I recommended to the superintendent and the foreman that they drive a small drift around this large room, so that the miners would not be compelled to pass through it in going to and coming from the shaft. I also found that the company had started a drift from the side of the main drift of the south shaft between the shaft and the face. This would weaken and widen the roof at this point, and the ground being of a boulder formation, the shooting might cave the roof, thus imprisoning the miners at work in the face of the main drift. I recommended to the superintendent and the ground foreman that they cease cutting this side drift until they had finished operations at the face of the main drift. This they promised to do. The ventilation was good. (Inspected by Brown.)

Myrick Mining Company.—The Myrick Mining Company is a copartnership composed of W. W. Wampler and C. E. Mathews. The company controls a lease on and operates 10 acres of land, the fee of which is owned by Thomas H. Heist. The land is located in section 9, township 27, range 33, Jasper county. The mine is reached by a shaft 111 feet in depth. There are three drifts from this shaft, with an average height of 20 feet and an average width of 30 feet. The company has a concentrating mill upon its property with a daily capacity of 150 tons. There are five air drills operated in this mine. Twenty miners and nine top and mill men are employed. I made an inspection of the mine on August 18th and found the top structures, hoisting machinery, cables, trap doors and tubs, all of which are practically new, in good condition. I also found the timbering in shaft, ventilation and the roofs and walls of the drifts to be in good condition. (Inspected by Brown.)

Nowata No. 1 Mine.—I inspected this mine on August 6th and found it in good condition. The concentrating plant is new, having recently been completed, and the equipment is first class. The mine is just being opened up and only the first row of pillars from the shaft have been turned. The pillars so far left are in good place and close enough together. There is only one shaft at this mine, but the workings are connected with the drifts of the Gibson mine on the north. Five drills are operated and 22 miners and 11 top and mill men are employed. (Inspected by Wallace.)

Oakwood Mining Co.—This company is operating on a 20-acre lease of the Wear, Bowman & Scott land. It also has a 20-acre second lease from Loehr & Sands. The mine is equipped with a first-class concentrating plant and is entered by three shafts, 196 feet, 175 feet and 186 feet deep—two of the shafts being connected for ventilation. Six air drills are operated and 23 miners and 12 top and mill men employed. I found everything in and about this mine on date of inspection, September 22d, in good condition, with exception of some drifts which had been cut too wide. There was a slab giving down in one drift and posts had been placed under it, but no work was being done there. I notified the superintendent to narrow in on the drifts. Roof seems good. (Inspected by Wallace.)

O. F. & L. Mining Co.—This company is operating on a 30-acre first lease of the Trinity Z. L. & S. Co. land at Porto Rico. There is one mine on the lease equipped with a 200-ton concentrating plant. Two shafts, 200 feet deep enter the mine, but only the north shaft is used for hoisting. Ventilation is satisfactory. Six air drills are operated and 25 miners and 10 top and mill men employed.

On date of inspection, September 17th, I found the top structures, hoist and cable in good condition, but the mine not in such good condition. The roof is very soft and slabby in places and was in need of trimming. The character of the formation here makes careful trimming a necessity. Fortunately, the mine is well pillared. I gave directions that the mine be given a thorough trimming. I was promised that this would be done on Sunday, the 19th of September. There is some bad ground, in and around the present runway drift, which is to be avoided by cutting a new runway from the north shaft. This will also shorten the distance between shaft and faces. The new runway is almost completed and will soon be in use. Also gave directions for placing hand rail at top of shaft. (Inspected by Wallace.)

Old Dominion Mining Company.—This company controls a 20-acre lease of the Big Stick lease of the Carter estate land in 12-28-33, Jasper county. The mine is equipped with a 150-ton concentrating plant. There are two shafts on the lease, 195 feet and 205 feet in depth, but only one shaft is in operation. These shafts are not connected. Four drills are operated and 22 miners and 10 top and mill men are employed. I inspected this mine August 25th. I found the mine and equipment in good condition. The present workings are at the tram shaft (or west shaft). These workings have no connection, are not well ventilated. Ventilation is supplied by a suction fan placed over a drill hole. This fan does quite a bit of good but the circulation of air is not satisfactory. A drift has been started to connect with a shaft which is to be sunk between the mill shaft and the tram shaft. When this shaft is completed and connection made a good circulation of air will be supplied. Cribbing is now on the ground for this shaft and it will be started at once. Sheet ground is being mined—faces 9 feet to 15 feet high. (Inspected by Wallace.)

Omega Mining Company.—This company has a lease on 10 acres of the Granby Mining and Smelting Company's land, located in the southeast quarter of the southwest quarter of section 33, township 28, range 33, Jasper county. The mine is reached through a shaft 110 feet deep. There are two drifts worked from this shaft, with a height of 30 feet and an average width of 30 feet. The dirt is hoisted by means of a steam hoist, and is cleaned by a 150-ton concentrating plant. There are two air drills operated. Eight miners and eight top and mill men are employed. I made an inspection of this mine on August 7th and found the shaft and mine in good condition and well ventilated. The cables, tubs, trap doors, etc., were in good condition, but the same cannot be said of the hoisting machinery, for the foot brake, which is used for lowering men into the mine, had become so worn that it was almost impossible for the hoisterman to hold a man or a tub on it. I called attention to this and recommended that same be repaired at once. I visited the mine two days later and found that the repairs had been made. (Inspected by Brown.)

Opportunity Mining Company.—This company holds under sublease, and operates 10 acres of land located in section 16, township 27, range 33, Jasper county. The Marion B. Mining Company holds the first lease, and the land is owned in fee by the Henderson estate, of which George A. Graves of Joplin is agent. The mine is entered by two shafts, with an average depth of 162 feet. At present the company is operating only one shaft, from which they are taking up a stope. This makes the drift about 20 feet in height and about the same in width. There is a concentrating mill on the lease with a daily capacity of about 150 tons. Eight miners and five top and mill men are employed. I made an inspection of this mine on November 10th, and I found all the top structures, hoisting machinery, cables, trap doors, tubs and the timbering in the shaft to be in good condition. I found several loose boulders in the roof of the drifts, and I called the attention of the foreman to these, and he promised to have them taken down at once. The ventilation was bad. I recommended to the superintendent that he connect the two shafts by drifts, so as to improve the ventilation and afford an escape for the miners in case of accident. (Inspected by Brown.)

Optimo Mine.—The Optimo Mining Company of Sarcoxie owns a first lease on 20 acres of land owned in fee by the Boyd heirs of Sarcoxie. Henry Boyd has the management of the land. There is one mine on this land, entered through a shaft 150 feet in depth, and the ore is broken from faces 30 to 60 feet in height. Four air drills are operated, and 14 miners are employed on day shift, 3 miners on night shift and 11 top and mill men. James Montgomery is superintendent of the mine. Improvements now being made are a general remodeling of the mill, including the building of a new hopper, new jigs and the addition of a 100-horse power boiler to the power plant, and the sinking of the mill shaft some 30 feet. I inspected this mine on August 2d and found several places where the roof had been carried too high, encountering a soapstone formation, which was inclined to cave. However, no work was being done in these drifts, Mr. Montgomery having decided, upon taking charge of the property some time previous to my visit; to cut around these places. The shaft is now being sunk and drifting will be commenced on a lower level, leaving a floor between the two levels. There being only one shaft or outlet to this mine, and that shaft sunk to almost its entire depth in comparatively soft ground, I gave the company written notice to, within thirty days, commence to sink another shaft to connect with the workings of the mine in accordance with the provisions of House Bill 531, approved March 18, 1907. Except as noted above, I found conditions satisfactory. (Inspected by Wallace.)

Oronogo Circle Mining Company.—This company is operating on 75 acres of land owned in fee by the Granby Mining & S. Co. There are two concentrating plants, a tailing mill and a large sludge mill on the property. Two levels are worked, the 240-foot level being reached by three shafts and the 160-foot level by these shafts and also by two other shafts, which have not yet been sunk to the deep level. On date of inspection, July 15th, I found the top structures, hoists, cables and general equipment in good condition. The mines are well pillared and seemed in good shape. I had no recommendations to make. Eighteen drills are operated and 75 miners and 50 top and mill men employed. (Inspected by Wallace.)

Second Inspection.—On October 28th I had occasion to visit these mines to investigate an accident that had occurred at No. 5 shaft—man being killed by falling off the mule cage while being lowered in the shaft. The use of mules having been recently adopted in No. 5 mine. I recommended that the shaft be laced from the bottom of the cribbing on down to the top of the drift so that mule cage could be hoisted and lowered without guidance, and that no men be allowed or employed to ride on the mule cage. (Inspected by Wallace.)

Osceola No. 1 Mine.—This mine is operated by the Barton Mining Company, sublessees to the Osceola Lead and Zinc Company of Webb City. The company controls under lease 20 acres of land located in section 7, township 28, range 32, Jasper county, the land being owned by the Kelly heirs. Three shafts, with an average depth of 185 feet, are located on the lease, the mine being connected with the Portland-Mercantile and the Electrical mines by drifts. I made a careful examination of this mine on December 11th, at which time five air drills were being operated and twenty-five miners and eight top and mill men were employed. I found the cables and hoisting machinery in good condition, and the ventilation in the mine was good. Some drifts in this mine have been cut far too wide and in other places the roof is so soft and slabby that it will hardly stand even with the pillars left close and timbers used between, but no work is being done in these parts of the mine with the exception of one drift, near the line of the Portland property, which was very soft. However, as this drift was being well handled and plenty of timbers used I could see no recommendation to make. I recommended repairs to the cribbing at the top of the shaft; that ice be kept trimmed out of shaft; that a guard rail be placed where floor of derrick drops away to the cull platform, and that the box around the well hole in the derrick be repaired and made safe. (Inspected by Wallace.)

Osceola No. 2 Mine.—McInturff & Co. control, under second lease, and operate the Osceola No. 2 mine in 7-28-32, Jasper county. The mill and the first lease on the land are owned by the Osceola L. & Z. Mining Co., and the land is owned in fee by John C. Guinn. There are three shafts 160 feet to 180 feet in depth, on the lease, but only one is operated. Three drills are operated and twenty miners and nine top and mill men employed. On June 8th I found the top structures, hoist and cable in good condition. There is some very widely cut and slabby ground in this mine, but that part of the mine has been abandoned and present workings are in fair condition. I found a loose slab in the roof ahead of the stope and gave directions that it be taken down before the stope was brought up. (Inspected by Wallace.)

Stevison, Rogers L. & Z. Co., is operating on 40 acres which it owns in fee. The land is located in 3-27-32, Jasper county. There is one mine on the land equipped with a large concentrating plant. The mine is entered by two shafts 200 feet deep and is very well opened up. Sheet ground is being mined, faces about 14 feet high. Eight drills are operated and 35 miners and 11 top and mill men employed. At time of inspection, September 23d, the mine was just being started after a shut down of some two years. There was some loose roof in two of the drifts, but as they were preparing to trim these drifts at once I had no recommendations to make. Hoists, cables and top structures in good condition. (Inspected by Wallace.)

Paragon Mining Company.—This is a copartnership, with W. B. Bash as manager. The company operates a mine on 21 acres of land owned by Charles Schifferdecker. It is located in section 5, township 27, range 33, Jasper county. This mine is entered by two shafts. Number one is worked at the 110-foot level and number two at the 115-foot level. The company has a concentrating mill upon its lease, the daily capacity of which is 300 tons. Three air drills are operated, and 21 miners and 14 top and mill men are employed. I made an inspection of the mine on August 14th and found the hoisting machinery, cables, trap doors, tubs, hooks, etc., in good condition. I inspected the underground workings and found the timbering in the shafts, the ventilation and the drifts from shaft No. 1 in good condition. In the drifts from shaft No. 2 the walls average 60 feet in height, and they had not been trimmed for some time. On these walls were loose boulders and slabs, which were in imminent danger of falling upon the shovelers who were compelled to work beneath them. I called the attention of the ground foreman and the superintendent to this dangerous condition, and ordered all loose boulders and slabs removed at once and the shovelers withdrawn until the work was done. (Inspected by Brown.)

Pilot Mine (formerly Emperor mine).—On December 12th, 1909, I accompanied Inspector Brown in an investigation of an accident that had occurred that day at the Pilot mine, and an inspection of the mine. We found the shaft, below the cribbing, in need of trimming. There being no one at the mine except the hoisterman, we decided to trim off the worst of the loose material ourselves. Mr. Brown handled the bell cord while I did the trimming with a pick and a short spoon. We trimmed off the largest and loosest of the rocks, but did not have time to trim the shaft thoroughly. Mr. Brown later gave directions to the superintendent and foreman that the shaft be thoroughly trimmed. (Inspected by Wallace.)

(See Brown's report of accident.)

Pinnacle Mining Co.—This company is operating on a 40-acre lease on the Granby land, adjoining the city of Oronogo. The equipment consists of a concentrating plant, having a capacity of 250 tons daily, with all necessary machinery. There is one mine on the lease, entered by a shaft 236 feet deep. I inspected this mine October 20th. Eight drills are operated and 35 miners and 10 top and mill men are employed. In many places the strata in the roof do not lie horizontally but pitch at a sharp angle. The roof seems very hard and I noticed only a few small pieces of loose material. These were in the arches where drifts are being raised and were taken down. The principal defect noted at this mine was the lack of proper ventilation. However, as another shaft is being sunk—it is now 160 feet deep—and an air drift being driven to connect with it when completed, this condition will soon be remedied. I urged that this work be rushed with all possible speed. John H. Tonkin is president and manager of the company. (Inspected by Wallace.)

Plymouth Rock Mine No. 2.—This mine is owned and operated by R. T. Randall of Joplin. The lease consists of five mining lots 200 feet square, leased from E. L. Burtiss of Joplin, who holds first lease on the land owned in fee by the Beacon Lead heirs, of which Charles Blair of Carthage is agent. The land is located in section 6, township 27, range 32, Jasper county. This is a small mine. The dirt is hoisted by means of a steam hoist and is cleaned on hand jigs. The mine is reached by a shaft 65 feet in depth. I made an inspection of this mine on August 10th. At the time only three miners and two top men were employed. The top structures, hoisting machinery, cables, top cars and the timbering in shaft, as well as the ventilation, were good. The timbers in the main drift had taken sudden weight, and the floor of the drift being soft, and no sills used under the posts, were forced down, and the drift was lost. However, a small drift is being cut to reach the face of the drift that was lost. I recommended that sills be used in future under the posts, and this Mr. Randall promised to do. (Inspected by Brown.)

Pole Star Mining Company.—This is a copartnership, with A. G. Solpher as superintendent and general manager. The company holds under sublease, and operates 10 acres of land located in section 35, township 28, range 34, Jasper county. C. O. Sims and S. W. Templeton hold the first lease, and the Geneva Land and Mining Company of Webb City are the land owners. The mine is entered by a shaft 170 feet in depth. The mine is operated at the 135-foot level. One drift is worked at this level. It is about 18 feet wide, 30 feet high and 200 feet long. The dirt is hoisted by means of a steam hoist, and is cleaned on hand jigs. Six miners and six top and mill men are employed at this mine. I made an inspection of this mine on September 23d and found all top structures, hoisting machinery, cables, top cars and the timbering in the shaft to be in good condition. The drift going east from the shaft had several loose boulders in the roof, which I pointed out to the foreman, and I helped him to remove them. The ventilation, which is produced by a 36-inch fan, is very bad. I recommended to the superintendent that he drill an 8-inch hole at the head of the drift, and install a suction fan. (Inspected by Brown.)

Powers Mining Company.—This is a copartnership composed of Mrs. W. E. Morgon, Dr. Cooksley and Charles Galyon. Mrs. W. E. Morgon is manager. The company holds a first lease on four mining lots located in section 9, township 27, range 33, Jasper county. The land is owned in fee by the Empire Lead and Zinc Company of Joplin. This is a small mine, entered by a shaft 95 feet in depth. There is a small drift at this level which leads to a cave, which reaches the surface. The company is mining the caved dirt at present. The dirt is hoisted by means of a steam hoist and is hauled in wagons to a concentrating mill, where it is cleaned. Three miners and two top men are employed at this mine. I inspected this mine on October 7th and found the hoisting machinery, cables, tubs, trap doors and the timbering in the shaft to be in good condition. The ventilation was good. The roof of the drift near the big cave is of a boulder formation. These boulders had become loosened by shooting, and were in immediate danger of falling on the men who were compelled to work beneath them. I called the attention of the foreman to this dangerous condition, and recommended that he put sufficient props under them to hold them up. (Inspected by Brown.)

Prairie Chicken Mining Company is a copartnership composed of George Gest, and Howard C. Murphy. The company controls under first lease 11 acres of land located in section 3, township 27, range 33, Jasper county. The land is owned in fee by the Connor Realty Company and the Murphy Investment Company. There is one mine on this lease operated by the company. This mine is reached by two shafts, the average depth of which is 176 feet. These two shafts are connected by drift. There is one concentrating mill on this lease. The mining machinery embraces two boilers, one engine, two pumps, one air compressor, four air drills, one hoister and one crusher. There are 17 miners and 8 top and mill men employed at the mine. I made an inspection of the mine on July 31st and found the cables, hoisting machinery, trap doors, etc., in good order. I also found the underground workings in good condition and the mine well ventilated. The conditions generally in and about the mine were satisfactory. (Inspected by Brown.)

Providence Mining Co. owns a first lease on 40 acres of land in 7-28-32, Jasper county, owned in fee by the Ashcraft-Reynolds Mining Co. There is a large concentrating plant on the lease which is well equipped in every way. Four shafts, 175 feet deep, enter the workings, but only three are in operation, the fourth being used as an air shaft. In addition to these shafts the mine has connection with the Engineers, White, Dog and Good mines, and the ventilation is good. On dates of inspection, April 3d and 5th, I found the top structures, hoists and cables in good condition and the mine also in good condition, with exception of some parts of it where the drifts are too wide. These wide drifts are principally in the old workings, and in the drifts now being cut, the pillars are left much closer. Sheet ground is being worked, faces about 9 feet high. Electric lights are used at the bottom of shafts and for quite a distance along the tracks. Seventy-five miners and 30 top and mill men are employed. Chas. T. Orr is general manager, C. A. Rice, superintendent, and William Chinn, foreman. (Inspected by Wallace.)

Second Inspection.—I made another examination of this mine on October 7th, and found that stope was being started from the mill shaft. Mr. Chinn seemed careful and efficient in handling the ground and I had no recommendations to make, other than that the roof be given extra attention on account of the liability of its becoming loosened by the stope shots, and that no stope be taken up under the bad roof near the north shaft. (Inspected by Wallace.)

Quick Seven Mine.—This mine is located on the Jesse Richardson land, about one and a half miles northwest of Neck City. The mining lease covers

78 acres of land held under first lease by the Quick Seven Mining Company, the operating company composed of a copartnership with the following interested persons: B. M. Henry, B. M. Seward, J. D. Vaughn, William Kelly and A. Larkin. One shaft is on the lease, having a depth of 165 feet, with a drift opening to one side only. I inspected this mine on March 23d. All improvements were made during 1908. The richness of this mine and the development on this lease have attracted the attention of operators from all parts of the district, and prospecting by drill and shaft is being carried forward with feverish energy upon this and adjoining lands, many good strikes being made. In my opinion, the passing of a year will find many producing mines in operation in this locality. I found the Quick Seven Mine in good condition, with exception of poor ventilation, showing the effect of able management. The ground is soft and very heavy and timbers are used in all the drifts—the timbering being well done. Another shaft is being sunk under the derrick at the mill, and a drift is now being cut from shaft No. 1 to connect with the new shaft when down. This will provide proper escapement and also improve ventilation. (Inspected by Wallace.)

Red Dog Mine.—On May 18th I made a thorough inspection of the Red Dog Mine, and an investigation of the accident that had occurred the day before, resulting in instant death to A. Pardain. The Red Dog Mining Company of Webb City, Temple Chapman, manager, owns a lease upon twelve acres of land owned by the Rochester Land and Leasing Company in section 6, township 28, range 32, Jasper county, about one and three-quarters miles north of Webb City, in the sheet ground district. The mine is entered by two shafts, 225 and 235 feet deep, respectively. The mill shaft is a double compartment shaft, hoisting being done by means of two second motion hoists, located in the derrick above the shaft. The other shaft is a single compartment shaft, connected to the mill by an inclined tramway. In addition to these there is an air shaft, but the latter is not used for hoisting purposes. Sheet formation is being mined, the cuttings extending over some one-third of the ground under lease. I found the hoists, cables and shaft timbers in good condition, with the exception of two lacing boards in the partition, near the collar of the mill shaft, which had warped and become loose. These were ordered taken out and replaced. The first cutting in the ground was made with faces about 10 feet high, and later a 10-foot stope was and is being taken up over the ground first cut. Holes sunk in the bottom of the drift near the shaft prove the existence of at least 10 feet more of ore-bearing ground, and another 10-foot stope will be taken up. When these stopes are driven back to the original headings the drifts will be about 30 feet high. I found no very wide drifts and the mine well pillared as a whole, though many of the pillars are too small. In three places, in taking up the first stope, pillars have been knocked down by heavy shots bedded close to them—an ore-bearing seam about two feet thick, near the top of the pillars, weakening them and making them especially liable to be "jumped out" by heavy shots. I am satisfied that this was unintentional upon the part of the operators, but even so, it is none the less damaging to the ground. There is a watercourse running through a portion of this mine and near this the roof is very soft and inclined to slab, being composed of strata of white flint (known as cotton rock), having very little strength. This cotton rock is very treacherous, having a tendency to break and come down when and where least expected, and

I warned Mr. Broam, the ground foreman, that he must watch the roof in this portion of the mine with the greatest of care and keep it well trimmed at all times, taking down all slabs ahead of the stope as it was driven forward. Much slab must be taken down to make this part of the mine safe. In other portions of the mine the roof seemed to be better, and no slabs were in evidence. The ventilation is very good. (Inspected by Wallace.)

I examined this mine again on October 18th, and found conditions improved since last inspection. As mentioned in my report of first inspection, there is a watercourse or channel running through the roof in the southwest part of this mine. At and near this watercourse the roof is very bad and requires constant attention. Ever since my last visit the operators have been taking down slab and getting the mine in shape. A roof trimmer is employed who does nothing else but examine roof. The second stope has been abandoned and work is now being done on the level of the first stope, effort being made to bring the stope up to the headings and push the drifts past the dangerous roof in the watercourse. Drifts will all soon be past this watercourse and the roof will probably be better. I gave instructions that some slab be taken down in drifts where stope had not yet been brought up to headings. Since my last inspection the ground around the north shaft has been opened up and work is being done there. I find it in good condition. This mine, like the Dinger mine, under the same management, is breaking down the ore in the faces with overhead stope and find the method very satisfactory, but I do not like it for the same reasons stated in the report of Dinger inspection. It is hard to keep this mine safe, but, considering the formation, is in good shape. (Inspected by Wallace.)

Red Lion Mine.—L. A. Cunningham of Joplin holds a sublease and operates 12 acres of land located in section 4, township 27, range 33, Jasper county. E. L. Anderson of Joplin holds the first lease, and the land is owned in fee by E. H. Norton of Platte City. The mine is entered by two shafts 175 feet in depth. There are three drifts operated at this depth, with an average height of 30 feet and an average width of 40 feet. Mr. Cunningham has a new concentrating mill on his lease with a daily capacity of 500 tons. He is just beginning operations and employs only nine miners and four top men. I made an inspection of this mine on October 2d and found all top structures, hoisting machinery, cables, trap doors and cars, all of which are practically new, to be in good condition. The timbering in the shaft was also in good condition. The two shafts are connected by drift, giving the mine a natural ventilation. I found that the roof and the walls had been badly neglected as to the trimming of loose boulders and slabs. I pointed some of these out to the foreman and recommended that he give the walls and roofs a thorough trimming, removing all loose boulders and slabs before permitting the shovelers to work in these drifts. (Inspected by Brown.)

Red Wing Mining Company.—This company is operating on a 10-acre first lease of the C. E. Elliot land, adjoining the city of Oronogo. Access to the mine is had by means of two shafts, 190 feet deep, which are connected by drift. The ore is concentrated on a plant of 250 tons capacity. Eight air drills are operated and 40 miners and 15 top and mill men are employed. I made partial inspection of this property on October 13th, returning to complete the same on October 20th. The workings are in a sheet ground formation and the roof is very good except in the south drifts where there are some slabs loose. No work is being done in those drifts, however. Several drifts have been cut too wide. The recommendations made by me were that pillars be set not over 40 feet apart (closer if necessary); two small slabs—as pointed out to the ground foreman—be taken down at once, and that improvements be made at the top of the mill shaft by filling in around the top of the cribbing, so that a suitable landing would be made, and placing hand rails on each side of the top of shaft. (Inspected by Wallace.)

Richvale Mining Co. operates under first lease from the American Z., L. & S. Co., 20 acres of land in 6-28-32, Jasper county. There are four shafts on the property, having an average depth of 120 feet, but only three shafts are now being operated. The ore is concentrated on a plant of 150 tons daily capacity. Twenty-four miners and ten top and mill men are employed. T. C. Jones, of Webb City, Mo., is manager. I inspected this property on April 27th.

I find the hoisting equipment, shafts and top structures in good condition. The drifts are some 30 feet to 35 feet high and are in a rather soft formation. They are not very wide and the pillars are large. I noticed small "bags" in several of the drifts and had them taken down. This mine should be trimmed often and carefully and I notified the management to this effect. There were long ladders in the ground for use in trimming. One drift near the mill shaft was in bad condition, but as no work was being done there, and no hoisting at the mill shaft, I had no recommendation to make. (Inspected by Wallace.)

Royle Mining Company.—This company is operating on 13 mining lots held under first lease from F. A. Chase, the land being a part of 4-27-32, Jasper county, near Duenweg. There is a concentrating plant of 100 tons daily capacity on the property and 10 miners of the day shift, 8 miners on night shift and ten top and mill men are employed. L. C. Sly, of Carterville, is superintendent and Harvey Thompson, of Duenweg, ground foreman. The mine is entered through one shaft, but also has connection with the drifts of the old Red Bud mine. I inspected this mine on April 26th. The work now being done is on the 205 foot level in a semi-sheet ground formation—the old workings in the timbering ground at the upper level having been abandoned and allowed to settle. These old workings are blocked off at the shaft by heavy pens. The shaft had been pulled slightly at the top by the settling of the old timbered drifts, but as this ground has been down for several years and is now thoroughly settled I could not see that there was any danger of its being pulled any more. The interior of the mine was rather rough looking but I saw nothing that seemed to be dangerous. I had no recommendations to make other than for a few repairs to the lacing in the shaft and that the men be hoisted and lowered very carefully and slowly (Inspected by Wallace.)

Note. The amount of ore in sight in this mine would not justify the sinking of another shaft.

Ruth Mining Company.—This is a copartnership composed of J. W. Haynie, J. E. Dickerson, M. Reediss and W. Jenkins, all of Joplin. This company operates six acres of land under a sublease, the first lessee being W. H. Yankee & Company, and the land owner, Jackson Armil, both of Joplin. There is but one shaft operated on this lease, which has a depth of 150 feet. The operating company has a concentrating mill on its lease, which has a daily capacity of 150 tons. The mining machinery embraces one boiler, one engine, one pump, one steam hoister, one crusher, two jigs, three sets of rolls and one Wilfley table. Six miners and six top and mill men were employed at this mine on August 21st. I made an inspection of the mine and found the top structures, hoisting machinery, cables, trap doors, etc., in good condition. The mine has underground connections with two other mines, giving it natural ventilation. This being an old mine and almost continuously worked for years, the timbering has become decayed and in bad repair in many places. I pointed out these defects to the foreman, and he promised to repair them at once. The drifts of this mine cross beneath the Frisco right-of-way, and the Frisco Railroad Company employs an inspector, who keeps me acquainted with the conditions of this mine. The mine is located in section 9, township 27, range 33, Jasper county. (Inspected by Brown.)

Sampson Mining Company.—This company is incorporated under the laws of Missouri for $90,000. The officers are W. F. Grower, president and treasurer; P. Ford, vice-president, and W. J. Briggles, secretary and manager, with postoffice address at Joplin. This company holds first lease and operates on 40 acres of land located in section 6, township 27, range 33, Jasper county. The land is owned in fee by Luke and Ash of Carthage. This mine is entered by two shafts, 164 feet in depth. The ground is of a sheet formation. The drifts are cut about 18 feet in height and are about 40 feet between pillars. The company has a concentrating mill on its lease with a daily capacity of 400 tons. Thirty miners and nine top and mill men are employed at this mine. I made an inspection of the mine on October 11th and found all top structures, hoisting machinery, cables, trap doors, tubs and the timbering in the shafts to be in good condition. I noticed several loose slabs which had been left in the roof of the drift. I called the attention of the foreman to these, and he had them removed before I left the ground. The two shafts are connected by a drift, thus giving the mine a natural ventilation. (Inspected by Brown.)

Sawyer Mining Company.—This company controls under first lease 10 acres of land owned by the Rex Mining and Smelting Company and located in section 7, township 27, range 32, Jasper county. The mine is entered by two shafts, 135 feet deep, which have recently been sunk. The company has just completed the erection of a 150-ton mill. The machinery embraces two boilers, two pumps, two steam hoisters, one crusher, two jigs and three sets of rolls. Six miners and seven top and mill men were employed at this mine. I made an inspection of the mine on August 24th and found the top structures, hoisting machinery, cables, tubs, pumps and the timbering in shaft and in mine to be in excellent condition. The ventilation is not satisfactory, it being produced by a 36-inch fan. The two shafts, however, are to be connected by a drift, which will remedy this condition. (Inspected by Brown.)

Schoenherr-Walton Mine, located on the John C. Guinn land in section 8, township 28, range 32, three-fourths mile northwest of Carterville, is operated by the Schoenherr-Walton Mining Company under sublease from the Rhea

Lead and Zinc Company. Two shafts are sunk on the lease, 145 and 155 feet deep, respectively, and connected by drift. I visited this mine March 8th and found the same shut down, preparing to sink for water, so I could not inspect the ground. The company recently installed a sludge table for the handling of fines and an independent electric light plant. I inspected the hoisting machinery and cables, and found same in good condition. A powder magazine is provided for the storing of powder. (Inspected by Wallace.)

I made complete inspection of this mine, on May 20th, in company with Mr. John Weaver, inspector for the Guinn land, upon which the mine is located. I found the formation here very soft and slabby in many places, but the operators seem to be doing the best they can with it and are not neglecting to take proper precautions. Pillars are left close and, in addition, several pens have been built. In the north and northwest drifts the ore is raising. Keeping these high drifts safe is simply a matter of extraordinary care and watchfulness in trimming. Two men are employed as roof trimmers. I recommend that hand rails be placed at the top on both shafts. Forty miners and 15 top and mill men are employed. (Inspected by Wallace.)

Seaford Mining Company.—This is a copartnership composed of Robert and Ruf DePriest, J. Seaford, J. P. Hemphill and O. E. Mead. J. Seaford is manager. The company holds a sublease on six mining lots located in section 27, township 28, range 33, Jasper county. The first lease is held by the Hemphill Mining Company. The land is owned in fee by the Montgomery Lead and Zinc Company, of which Lee Taylor of Joplin is agent. The mine is reached by a shaft 104 feet deep. There are two levels worked at this shaft, one at 90 feet and the other at 104 feet. Four miners and two top men are employed. I made an inspection of the mine on October 26th and found all top structures, hoisting machinery, cables, top car, tubs and the timbering in the shaft to be in good condition. I found that the drifts at the 104-foot level were in a bad condition. The timbers were all rotted out and broken down. I recommended to the superintendent that he cease operations at this level. The drifts at the 90-foot level were in good condition, but the ventilation was bad. I recommended to the superintendent that he drive a drift to connect these workings with another shaft on this lease, so as to improve the ventilation and afford an escape for the miners in case of accident. (Inspected by Brown.)

Smith and Whitaker Mine.—Smith and Hampton, a copartnership, are operating this mine under a sublease from Smith and Whitaker, who leased it from the Rhea Lead and Zinc Company, the first lessees. The lease is on five acres of land owned by John C. Guinn, situated in section 8, township 28, range 32, three-fourths mile northwest of Carterville. I inspected this mine on March 8th, at which time 12 men were employed. The mine having only one shaft, with no other outlet, the ventilation is, of coure, not good. To overcome this difficulty a drift is being cut to connect with the workings of the Meadville shaft No. 1, thus giving air to both. I find here the same character of roof as in other mines examined on this lease—very rough and inclined to slab and come down. Parts of this mine have been practically ruined by poor judgment in cutting the ground too wide. In one drift a large slab has fallen and no work can be done there. I directed Mr. Hampton to leave plenty of pillars and put timbers under all weak places. One slab in a drift south of the shaft I ordered taken down at once, as it was loose and hung directly over a trackway. Sheet ground is being worked, the faces being about 7 feet to 10 feet high. (Inspected by Wallace.)

Second Inspection.—On Saturday morning, August 7th, I was called to the Smith mine on the Rhea Lead and Zinc Company lease of the John C. Guinn land, in section 8, township 28, range 32, by the report that an accident had just occurred in said mine. Being in the immediate neighborhood of the mine at the time, I at once went down the shaft and found that the ground foreman, Mr. Sinclair, who was also acting as tub-hooker at the time, had been slightly injured by rock falling from a tub just as it was started up the shaft—his shoulder probably dislocated. It seems that the tub caught under the edge of an air flume, running down one corner of the shaft, or was bumped against the side of the shaft and the rocks knocked out. Since my former inspection of this mine on March 8th, connection has been made with the drifts of the Meadville Mining Company on the west, and the air flume is no longer needed or used. I therefore directed that it be removed from the shaft, thus giving more room for the tubs going up and down. Since my first visit the shaft has been sunk some 15 feet and a stope is being taken up. The mine is being operated at present by James Smith of Carterville. At the time of last inspection it was owned by Smith and Whitaker and operated by Smith and Hampton. It has been shut down for some time and only recently started up. There is some very bad roof in parts of this mine, and I warned Mr. Smith to keep it well trimmed in front of the stope, using pens built of squared timbers to support the weak places. (Inspected by Wallace.)

Third inspection. I returned to this mine on October 2d and found that the air flume had not been removed from the shaft as I had requested at time of last inspection. I ordered that it be removed at once and the shaft laced.

Found them taking up stope under some very bad roof in one drift and ordered this drift abandoned and the men kept out of it. In another drift I ordered work stopped at a certain point, which I marked, because of bad roof ahead. The drifts being opened up on the west and northwest in solid ground are in good condition. (Inspected by Wallace.)

I again visited this mine on October 23, 1909, and found that Mr. Smith was preparing to shut the mine down and quit. (Inspected by Wallace.)

Spanaflora Mine.—I visited the Spanaflora mine, operated by S. D. Euritt & Co. in an 8-acre sublease of the Eleventh Hour lease of the Chinn land, on November 30th. I found the men working were all partners in the lease, but, nevertheless, I called their attention to the dangerous condition of the shaft timbering and advised that same be repaired at once. (Inspected by Wallace.)

Silver Leaf Development Co.—This mine was formerly known as the Louis W. mine. I inspected the east, or mill shaft ground, at this mine on September 13th and found some very heavy slabs in the roof—principally caused by the ground being cut too wide. I gave instructions that they be taken down until tight if they had to be followed across the mine. Two drifts on the east side I directed them to abandon and cut around because of the condition of the roof.

My parting injunction to Mr. Allen, the ground foreman, was to leave nothing undone that would make for the safety of the mine. At the time of this inspection five men were at work trimming roof. Top equipment in good condition. (Inspected by Wallace.)

Sunflower L. & Z. Co.—This company is operating under a sublease from Wm. A. Nye on 17½ acres owned by Gilbert L. Smith and situated about ½ mile north of Carterville. This company has just completed a fine large concentrating plant on the lease. There is one shaft 160 feet deep, with tramway to the hopper of the mill and another shaft is now being sunk under the derrick at the mill. At the same time an air drift is being driven from the south shaft to connect with the mill shaft when it is completed, thus securing natural ventilation. At present 10 miners and 10 top and mill men are employed. The south shaft is an old shaft and is in need of trimming. The formation where drifts are being driven is very blocky and confused—seemingly an old watercourse—and on date of inspection, August 19th, I directed that the drifts be not widened until they were well out of this confused formation. The drifts were narrow at time of inspection. Directed that the south shaft be trimmed and guards placed protecting the engine and air compressor drive belts. Otherwise conditions were satisfactory. (Inspected by Wallace.)

I visited this mine on October 2nd and found that my recommendations had been complied with.

Sycamore Mining Company.—This is a copartnership composed of J. H. Robertson, W. G. Robertson and H. E. Sandlin of Joplin. The company operates on 20 acres of land owned by the Rex Mining and Smelting Company, and located in section 18, township 27, range 32, Jasper county. This is a small mine entered through two shafts, 65 feet in depth. The dirt is hoisted by means of a steam hoist and is cleaned on hand jigs. The machinery embraces two boilers, two hoisters, one pump and four hand jigs. Six miners and six top men are employed here. I made an inspection of this mine on August 23d and found all top structures, hoisting machinery, top cars, cables, tubs, timbering in mine and shaft, ventilation, and, in fact, everything in and about the mine to be in excellent condition. (Inspected by Brown.)

Temagami Mining Company.—This company holds under first lease, and operates 18 mining lots, located in section 9, township 27, range 33, Jasper county. The land is owned in fee by the Continental Zinc Company of Joplin. The mine is entered by an incline shaft 228 feet in depth. The mine is operated at the 214-foot level. There are two drifts worked at this level, whch average about 10 feet in height and 20 feet in width. There is a vertical shaft on the lease 228 feet deep, which is used as a pump shaft. The company has a concentrating plant on its lease with a daily capacity of 250 tons. Twenty miners and six top and mill men are employed at this mine. I made an inspection of this mine on October 1st, and found all the top structures, hoisting machinery, cables, trackage, cars and the timbering in shaft in good condition. The ventilation, which is produced by a drill hole and a 46-inch fan, was not very satisfactory. I recommended to the superintendent that he drive a drift to connect this mine with the pump shaft, so as to afford an escape for the miners and to give the mine natural ventilation. This he promised to do. The drifts were in good condition. (Inspected by Brown.)

Texahoma Mining Co.—This company is operating on a 54-acre lease of the Amsden land in 30-29-31, Jasper county. The concentrating plant on the lease is of 150 tons daily capacity. There are three shafts, 160 feet deep, on the land, but only one shaft is in operation. Fourteen miners and 7 top and mill men are employed. I inspected the mine—which was just being re-opened after an extended shut down—on October 29th and found it in fair condition. The roof is hard and with a good trimming can be placed in good shape. Some trimming had been done, but more was needed and I directed that all of the drifts where they proposed to work be thoroughly gone over, and that for this purpose an extension ladder be furnished. Ventilation is secured by drift connection between two of the shafts. (Inspected by Wallace.)

Thornton Mining Company.—I inspected this mine on August 31st. There are two shafts, on 114 feet in depth and the other 160 feet in depth. These shafts are connected by a timbered air drift on the 100 foot level. Two steam drills are operated and 12 miners and 7 top and mill men employed. I found the hoists, cables and top equipment in good condition and the mine in fairly good shape. The ore occurs in a desseminated formation and the drifts are high, requiring frequent trimming. I directed that an extension ladder be furnished for use in trimming the roof of drifts and sides of pillars. (Inspected by Wallace.)

Second inspection. I again visited this mine on October 19th, but could see very little on account of the exhaust from the drills making the air murky. I noticed that there was a long trimming ladder in the mine, but it was very heavy and would require several men to raise it. Thinking that the trimming would be more apt to be done if there was a light extenstion ladder in the mine, I ordered that one be furnished without further delay. (Inspected by Wallace.)

Three Johns Mining Company.—This is a copartnership composed of C. Nichols, J. and L. Good, L. Moser, T. J. Williams and L. Moulder, all of Joplin. This company holds under sublease and operates four mining lots located in section 27, township 28, range 33, Jasper county. The first lease is held by the Hemphill Mining Company, and the land is owned in fee by the Montgomery Lead and Zinc Company, of which Lee Taylor of Joplin is agent. The mine is reached by a shaft 85 feet in depth. There are two drifts operated at this level, with an average height of 8 feet and an average width of 10 feet. The ground is of soapstone and boulder formation, and requires very close timbering. The dirt is hoisted by means of a steam hoist, and is cleaned on four hand jigs. Five miners and five top men are employed. I made an inspection of this mine on November 11th and found the top structures, hoisting machinery, cables, trap doors, tubs and the timbering in the shaft to be in good condition. The timbering in the drifts was in good condition, although I found that it had not been sufficiently collar-braced in order to properly hold the ground. The ventilation was bad. I recommended to the foreman that he either connect these workings with a shaft that was about thirty feet distant or sink an air shaft at once. He promised to connect with the other shaft. (Inspected by Brown.)

Troup Mine, located in section 21, township 28, range 32, on land owned in fee by McGroskey, Anderson [illegible] is operated under a first lease by McDonald Brothers and Henson. The operating company controls under lease 40 acres. But one shaft on the lease was in operation on date of inspection, December 31st. The mine has two outlets, one connecting with the Boston Get-There and another with the Eleventh Hour mine. Ventilation in the mine is excellent. A contract was let for the erection of a 200-ton mill over the shaft, which has just been sunk, tapping the old workings in the sheet ground. At the request of the owners, I looked this mine over with a view to outlining a plan of operation and timbering. The recommendations made by me were readily agreed to, but as no force of men will be employed until the completion of the mill, I did not consider it necessary to serve written notice of requirements at this time. (Inspected by Wallace.)

Uncle Joe Mine.—The Uncle Joe Mining Company controls a first lease on nine acres of land owned in fee by J. F. Haslett of Carterville in section 8, township 28, range 32, Jasper county. There are two shafts on the lease, 145 and 170 feet deep. The improvements consist of a 200-ton concentrating plant, completed in June, 1909. I inspected this mine on August 4th and found the hoist, cables, trap door and timbering in the shaft in excellent condition. The same cannot be said of the interior of the mine, which was in very poor shape. It seems that the mill shaft was sunk into a watercourse and the drifts started out in same. The ground is very loose and slabby, the strata being broken up in all conceivable shapes, necessitating the use of timbers. I recommended that only small drifts be driven until the watercourse had been cut through; also, that the air drift conecting the two shafts be pushed with all possible speed, as the ventilation was not good by any means. Only about 25 feet remain to be cut to make this connection. Ten miners on day shift, nine miners on night shift and nine top and mill men were employed. I also noticed that the spur wheel of the lift pumps extended out over the shaft on the west side. I considered this dangerous to the men coming up the shaft. It being impossible to move this wheel back, I directed that it be enclosed with lacing boards or a sheet iron cover or guard, and that as soon as the air drift was completed the men be hoisted and lowered in the other shaft. (Inspected by Wallace.)

Second Inspection.—I visited this mine on the following Saturday, August 7th, and found that the mill had been shut down and the men laid off, with the exception of the foreman and a sufficient force to drive the small prospect drifts. (Inspected by Wallace.)

Under Roof Mining Company.—This company holds first lease and operates one small mine on eight acres of the Granby Mining and Smelting Company's land, located in section 4, township 28, range 33, Jasper county. The original workings were at 122 feet, but the shaft has recently been sunk to the depth of 172 feet. The dirt is hoisted by means of a steam hoist and is cleaned on four hand jigs. The machinery consists of one boiler, one steam hoister, one steam drill and four hand jigs. I made an inspection of this mine on August 12th and found the cables, top car, hoisting machinery and timbering in shaft to be in good condition. The ventilation was bad, but it will be improved by the installation of a 28-inch fan, which was being installed while I was there. (Inspected by Brown.)

Underwriters Land Co.—This company owns the fee of 40 acres of land in 6-28-32, Jasper county. The largest concentrating plant in the Western

District is located on this land, the daily capacity being 2000 tons. In addition to the large plant, there is a smaller one of 200 tons capacity, which was the first plant erected on the property. The C. C. & H. Milling Co. are also operating two tailing mills, re-running the tailings from the Underwriters mills. Sheet ground is being mined with faces about 9 feet high. Four shafts 165 feet deep and two inclines enter the workings on this land. The large plant is now being operated at only one-half capacity. Twenty air drills are operated and 230 miners and 75 top and mill men are employed. On date of inspection December 23d, 24th and 27th I found the mine and equipment in good condition. This company seems to be very careful in conducting its operations. I noticed that hand rails had been provided at the top of all shafts and that in two shafts, where there were no pipe lines, large manila cables had been hung for the men to guide by in going down and coming out, thus keeping the tub from spinning. There is bad roof in some parts of the mine, but it seems that these places are given the proper attention and are timbered if necessary. In the first drifts cut the pillars were set in rows but they are now being set zigzag, or bias with the shaft. (Inspected by Wallace.)

United Zinc Co. is operating on 55 acres of land in 34-28-32, Jasper county, a part of which is owned in fee and a part held under lease. A concentrating plant capable of handling 500 tons per shift has been erected, all of the equipment being first class. There are three shafts on the land, averaging about 225 feet in depth. Two of these shafts have been connected by drift and a drift has been started to connect the third. Seven air drills are operated and 25 miners and 22 top and mill men are employed at present. As the mine is opened up the force will be greatly increased. On date of inspection August 21st I found some bad roof in the north drift from the tram shaft—caused, I was informed, by poor work on the part of contractors in opening up the ground. I directed that a pen, or a square set of timbers, be built in the mouth of this drift so that the slabs in the roof could be trimmed back to the timbers and caught there. The mine was well pillared but there was some loose roof in other drifts. I ordered that this loose be trimmed down at once. Top structures, hoists and cables in good condition. (Inspected by Wallace.)

Vesuvius Mining Co.—This company has a lease on 54 acres of land owned in fee by T. N. Davey, of Carthage, Mo. The land is situated about 4 miles northwest of Carthage. There is one mine on the lease entered by two shafts, 160 feet and 180 feet in depth. The ore is concentrated on a plant of 150 tons daily capacity. From two to four drills are operated; 24 miners and 12 top and mill men employed. I made an inspection of this mine on August 10th and found it in good condition considering the formation. A large body of disseminated ore has been worked at this mine, several stopes having been taken up, and the drifts are high, but the mine is very well pillared. The formation is what is known as "boulder formation," and the principal factor in keeping the mine in safe condition is constant watchfulness and care in trimming. One man is employed as roof trimmer, and the necessary ladders are on hand with which to do the work. Mr. Stealey, the manager, is a very careful operator. The recommendations made by me were that hand rails be placed at the top of the shaft, (only the mill shaft is used for hoisting) and that primers be kept separate from the powder which was taken into the ground for daily use. (Inspected by Wallace.)

Vogey Mine.—The American Z. L. & S. Co. is operating this mine on land owned by the company in 34-28-32, Jasper county. This mine is called the American-Vogey. The concentrating plant is of very large capacity. 'I made an inspection of this mine on September 1st and found the top equipment, hoist and cable in good condition. There is only one means of ingress and egress at this mine—by a shaft 175 feet deep— but this defect is being remedied by a drift which is now being driven to connect with the Swayback workings on the southeast. The ventilation is fair, being produced by a No. 2 Root blower and a 42 inch fan over drill holes. Natural ventilation will be supplied when the air drift to the Swayback is completed. The underground workings are in good condition except where wide cutting by the company that opened the mine up has caused some bad roof. I gave instructions that these places be timbered. At present, while the mine is being re-opened 25 miners and 20 top and mill men are employed, but this force will be increased when there is room for more drills. (Inspected by Wallace.)

Waneta Mining Company.—This company holds under sublease and operates 50 acres of land located in section 8, township 27, range 33, Jasper county. The first lessee is the Osceola Lead and Zinc Company and the land is owned by C. Lambert and others, all of Joplin. This mine is entered by a shaft 120 feet in depth. There are five drifts worked at this level with an average height of 30 feet and an average width of 30 feet. The company has a concentrating mill upon its property with a daily capacity of 150 tons. Sixteen miners and seven top and mill men are employed at this mine. I made an inspection of this mine on September 17th, and found the hoisting machinery, cables, trap doors, tubs and the timbering in mine and shaft to be in good condition. The ventilation was good, being produced by drift connections with the West Seventh Street Mine and by an air shaft. Where this mine makes drift connections with the West Seventh Street Mine a large room has been cut out by both companies. This room is directly beneath the public highway, and I notified both companies that in my judgment it would be endangering the lives of the traveling public to further mine at this point. (Inspected by Brown.)

Wautauga Mining Company.—This company controls under first lease 20 acres of land located in section 14, township 27, range 33, the land being owned in fee by the Roaring Springs Mining Company. There is one mine on this land operated by the first lessee. This mine is reached by two shafts 80 feet deep and connected by a drift, giving good ventilation. There is one concentrating plant on this property, the daily capacity of which is 100 tons. Thirteen miners and eight top and mill men were employed at this mine. I made an inspection of the mine on July 23rd and found the hoisting machinery, cables, trap doors, timbering in shaft and mine in good condition.. The same, however, cannot be said of the pumping machinery, which consists of a 6-inch discharge centrifugal pump, driven by a gas engine belted to a two and a half-inch line shaft. Running down the mine shaft on this line shaft there are two flange couplings, and as the shaft runs at the rate of

800 revolutions per minute, and is entirely unprotected, it is very dangerous for the men going down or coming out of the shaft. I called the attention of Mr. Gardner to this condition and recommended that the line shaft be cased or inclosed. This he promised to do at once. I also found very careless and slack conditions in the way powder was stored at this mine. One and a half boxes being kept in the miners' change house, and in the same house was a broken bale of hay and a five-gallon can of gasoline with no top on the can, one-half box of dynamite caps and two barrels of engine oil. I called the attention of the superintendent to this dangerous condition, and he promised to remove same at once and to prevent a recurrence of such carelessness. (Inspected by Brown.)

Weaver Tri-City Mining Company is operating on 80 acres of land owned by J. W. Weaver of Carthage and located four miles northwest of Carthage. One shaft is operated at a depth of 210 feet. I made an examination of the mine on November 6th, and my recommendations for improving the condition of the mine are set out in the following, a written notice which was served on the company: "Upon my recent inspection of your mine on the Weaver land I found that there is only one shaft or outlet to same. This I consider dangerous, especially in view of the fact that this shaft is sunk through soft ground, and is very liable to be pulled out of shape or caved in by the operations necessary to the working out of the ore body. Therefore, I direct that you, within thirty days, commence to sink another shaft to connect with the workings of said mine. I recommend that this new shaft be sunk in the hard ground east or northeast of the present shaft, and then connected with same by means of a small drift. This is in accordance with the provision of H. B. 531, approved March 18, 1907." (Inspected by Wallace.)

West Mine.—H. E. West of Independence, Kansas, operates a mine on a lease of 23 acres, the land being owned in fee by the Rex Mining and Smelting Company, and located in section 7, township 27, range 32, Jasper county. G. T. Warren of Joplin is the superintendent. The mine is reached by a shaft 106 feet deep. There are two drifts worked, one about 60 by 30 by 30 feet, and the other 18 by 12 by 12, both timbered. A concentrating mill on the property has a daily capacity of 100 tons. The mining machinery embraces two boilers, two jigs, one crusher, three sets of rolls, one pump, one Wilfley table, one steam hoister and one 36-inch blower. Twenty-four miners and nine top and mill men are employed. I inspected this mine on August 25th and found the top structures, hoisting machinery, cables, tubs, trap doors and timbering in the shafts to be in good condition, but the timbering in mine, where 25-foot posts are used, was not braced, which made it dangerous should they get side weight. I called the attention of Mr. Warren, the superintendent, to this condition, and recommended that he have these posts collar-braced at once. Ventilation is not good, being produced by a 36-inch fan, but the company is driving a drift to connect this mine with the Big Casino mine, which will give the mine a natural ventilation. (Inspected by Brown.)

Second Inspection.—In my report of the West Mine on August 25th I recommended that timbers in the mine be collar-braced. My recommendations were not complied with, and the timbers having taken weight, fell down, causing the drift to cave. But fortunately it happened at noon when no one was at work in the ground. I visited this mine on the 5th of September and stayed in the ground most of the forenoon. I ordered the remaining timbers that were standing to be collar-braced, which was done before I left the ground. Mr. Warren promised to brace the timbers in future as they were put up. I also found that the drift which Mr. Warren promised to drive to the Big Casino mine for ventilation was not being prosecuted as it should. From the first time I was there until September 5th, eleven days, only about three feet had been cut while three feet should have been cut each shift. There were sixteen men in the ground at this time, and the air was very close. I ordered a double shift put on this drift and to be continued until the air reached the shaft. (Inspected by Brown.)

West Seventh Street Mining Company.—This company holds under sublease and operates 4 acres of land located in section 5, township 27, range 33, Jasper county. The first lessee is the Old Dominion Mining Company, and the land owner is Charles Schifferdecker, both of Joplin. The mine is reached by a shaft 120 feet deep. At present the company is taking up a ten-foot stope. This makes the drifts about 45 feet in height and 30 feet in width. There is a concentrating mill on the lease with a daily capacity of 150 tons. Eight miners and seven top and mill men are employed at this mine. I made an inspection of this mine on August 13th, and found the hoisting machinery, cables, trap doors, tubs, etc., in good condition, while the shaft was in fair condition. The walls of the drifts needed trimming, as there were boulders which had become loosened by the heavy blasting in the stope. I called the foreman's attention to this condition and recommended that he give the walls a thorough trimming. This he promised to do. This mine is connected by drift with the Osceola and Paragon mines, giving it a natural ventilation.

Second Inspection.—I visited this mine again on September 5th, and found that my recommendations had been complied with, and that the loose rock and boulders had been removed, but I found upon investigation that the intersection of the drift from this mine and the drift from the Osceola mine was directly beneath a public highway, and at this point a large room had been cut out by both companies and no pillar had been left to support the roof. I consider it dangerous to the traveling public to further operate at or near this point, and notified both companies by letter and also the county road commissioner of this dangerous condition. (Inspected by Brown.)

Following the accident which occurred at this mine on February 27th, a few days after I was appointed inspector, I made an examination of this mine for the purpose of making recommendations for the safety of the mine before further operations should be attempted. I directed that a pen, 16 feet square and filled with rock, be built in the place where the original pen had been started, and where the men were killed. The original pen was being built of 8 foot logs which, in my opinion, was not nearly large enough. The Ritter boys were surely not afraid of that roof or they would not have started to build an 8 foot pen in a drift that high. Recommended that in driving drift straight ahead past the pen, and in turning drift to the left of the pen, square sets of timbers be used until well beyond the bad roof. I also noticed that where the shaft had been cut out on two sides in operations a crib of logs had been built, reaching some 30 feet or 40 feet up to the roof. This crib was resting on four posts and, as the shafts had been sunk deeper to take up stope on the south side, these posts were simply resting in hitches and were apt to slip out and allow the whole fabric to fall. I ordered that heavy logs be laid lengthwise across the edge of the shaft and the crib built up solid from them, cutting a doorway on the north side. I urged that especial attention be given to trimming. (Inspected by Wallace.)

I returned to this mine thirty days later and found that my recommendations had been complied with. The pen having been built and well keyed up; the timbering placed, and the crib at the shaft fixed as I had asked (Inspected by Wallace.)

White Dog Mine (Formerly Majestic-Consolidated).—This mine is operated by the White Dog Mining Company, lessees of an 11-acre tract owned by Albert T. Kelly and located in section 7, township 28, range 32, Jasper county, north of Webb City. One shaft is operated at a depth of 190 feet. The ventilation in the mine is good, the mine being connected with the workings of the "Providence," Osceola" and "Carbondale" mines I inspected this mine on March 25th and found the hoisting machinery and cable in good condition. The underground workings, where work is now being done, are in fairly good condition. The pillars are too far apart, but the roof seems to be standing well. I notified the ground foreman that pillars must be left closer in future. In other parts of the mine where no work is now being done the effects of wide cutting can be seen in the slabs of roof which have come down. I noticed that proper care was not being used in the handling of explosives in the mine. About two boxes of powder were scattered in the water at the bottom of the drift, near the shaft—being placed there to thaw—and in examining a pile of old powder boxes nearby I found some 6 or 8 sticks of powder scattered through the pile. I warned the superintendent and foreman as to this bad practice and had the powder put in a more suitable place. (Inspected by Wallace.)

Second inspection. Following the accident on June 22nd, in which A. B. Moody was instantly killed by a fall of roof I went to the mine for the purpose of investigating the cause of the accident and inspecting the mine.

The accident had occurred in a part of the mine which was not being worked at the time of last inspection and, as stated in report of accident, was due to wide cutting of the ground and not exercising due care in looking after the roof. I found several places where sufficient pillars had not been left, especially in the latest cuttings. It being the intention of the operating company to discontinue work in the headings and to take up a 20 foot stope from the shaft out, I directed that pens, built of squared timbers, be used to take the place as far as possible of the pillars that should have been left. I spotted the locations for eight of these pens on the blue print of the ground in the office of the company. Many of the pillars—while large enough for an 8 foot drift—are not large enough for a drift 28 feet high and I anticipate trouble unless care is used in turning these pillars with the stope. The shaft having been sunk for many years the timbering has become rotten near the top and is in bad condition. I ordered repairs to be made at once. (Inspected by Wallace.)

I visited this mine again on September 30th and found the repairs made at the top of the shaft. In taking up the stope the first two pens had been placed as per my instructions.

Third inspection. I again inspected this mine on October 7th and found that my instructions as to placing of pens were being carried out as far as the stope had been taken up to date. There is a very soft place in running through the roof of this mine—seemingly an old watercourse—a north and south direction, and passing just east of the shaft. I directed that no stope be taken up under this place. I again cautioned the foreman that he must be careful not to shatter the pillars as they were already too small and would not stand weakening. Recommended an extension ladder for use in trimming and examining the roof and pillars. There is some widely cut and bad ground in this mine where it will be impossible to take up stope. (Inspected by Wallace.)

White Swan Mining Company.—This is a copartnership composed of F. W. Pohlman, W. E. Allen and J. A. Blow. The company holds first lease and operates 10 acres of land located in section 35, township 28, range 34, Jasper county. The land is owned by the Geneva Land and Mining Company of Webb City. The mine is entered by a shaft 170 feet in depth. The mine is operated at the 135-foot level by the day shift and is being sunk to a lower level by the night shift. There are two drifts at the 135-foot level, one of which is about 30 feet wide and 70 feet high and the other is about 30 feet wide and about 30 feet high. There is a concentration mill on the property with a daily capacity of 150 tons. Eight miners and seven top and mill men are employed at this mine. I made an inspection of this mine on September 23d, and found all top structures, hoisting machinery, cables, trap doors, tubs, etc., in good condition. The drifts at the 135-foot level have been cut so high and wide at the shaft as to badly weaken it. The ventilation, which is produced by a 36-inch fan, is far from satisfactory. I recommended to the superintendent that he drive a drift to connect these workings with those of the Pole Star mine, about 40 feet distant, so as to afford an escape for the miners and to give the mine a natural ventilation. (Inspected by Brown.)

Wilbert and Shreves are working on the Daugherty, Davey, Kane and McMillan tract in section 17, township 28, range 32, south of Carterville. There are a number of shafts on this lease, but only one is in operation. These two men (Wilbert and Shreve) in following a small streak of ore showing in the face of an old drift, have opened up a face of very fine ore which will assay from 7 to 10 per cent. This ore face is some 30 feet wide and 30 to 40 feet high. The dirt is hoisted by horse power and milled on a custom mill. Upon adjoining lots have been some of the best mines ever opened up in the district (though now worked out), and this prospect bids fair to be a good mine in the near future. It is of interest from the fact that should this run of ore continue for any distance it will demonstrate that much of our old ground, supposed to be worked out, still contains rich bodies of ore. Access to this prospect can be had through the cave-in of the old "Zenith" workings by simply walking down a pathway and into the drifts. I visited this prospect on March 20th. (Inspected by Wallace.)

Winslow Mining Co.—This company is operating on a 20-acre lease of the Newell-Morse Mining Co. land in 12-28-33, Jasper county. There are two concentrating plants and two mines, entered by three shafts 230 feet deep, on the lease but only one mine and plant are being operated. Sheet ground is being mined, and dirt is being hoisted at No. 2 and No. 3 shafts. Five air drills are operated and 32 miners and 12 top and mill men employed. I inspected these mines September 14th. No. 2 ground is connected with the workings of No. 1 shaft and consequently has natural ventilation. The drifts at No. 3 shaft have no connection and the air is close. An air drift is now being driven to connect No. 2 and No. 3, and when completed will give good ventilation. I noticed a large slab to be loose in the roof of south drift from No. 2 shaft; a slab on the shaft pillar at No. 2 shaft, and that the shaft needed trimming and the corner pockets cleaned of loose rock. I gave directions that the slabs be taken down and the shaft trimmed. (Inspected by Wallace.)

Note. Was notified some days later by the superintendent, Mr. Sanford, that my recommendations had been complied with.

Yale Mining Co.—This company is operating on a 15-acre lease on land owned by the Missouri Zinc Fields Co. There are two shafts in operation on the lease, the mill shaft being 176 feet deep and the west shaft 195 feet deep The major portion of the work is being done at the west shaft—only one machine and two shovelers working from the mill shaft. On date of inspection June 10th I found the hoists and cables in good condition, but the west shaft is not in very good shape. The shaft is small to begin with and then the top of it has been pulled out of line by a cave-in of some upper ground workings to the south. I instructed the superintendent to re-crib this shaft and straighten it up at the top. The interior of the mine was in good condition with the exception of one drift in the mill shaft ground (near air drift to west ground) where there was a bad slab in the roof. I gave orders that no work be done in that drift until the slab had been taken down, but found that such orders were unnecessary as the drift was to be abandoned. Seven drills are operated and thirty miners and fifteen top and mill men employed. (Inspected by Wallace.)

LEAD AND ZINC MINE ACCIDENTS
1909.

Table 30—Lead and Zinc—Western District—Non-Fatal Accidents, 1909.

Date of accident.	Name of injured.	Occupation.	Age	Married or single.	Orphans.	Name of operator.	County.	Nature of accident.	Amt. of insurance.
April 27	Frank Short	Machine man	32	S		Grace Zinc Co	Jasper	Premature explosion	
April 27	Patrick Finn	Machine helper	24	S		Grace Zinc Co	Jasper	Premature explosion	
June 16	J. A. Brand	Machine man	48	M		American Davey No. 1	Jasper	Caught by shot	$5,000 00
June 29	Louis Malone	Drill-man	35	S		Motor Mining Co	Jasper	Returned on failed shot	
July 7	William Rodgers	Miner	32	M	2	"We Do" Mining Co	Jasper	Explosion of powder	
July 9	M. C. Bradley	Drill man	29	S		Jonas Smith (Cowhead)	Jasper	Premature explosion	
July 25	Sam Lynch	Machine helper	28	M		American Davey M. Co	Jasper	Explosion of powder	
August 14	E. O. Bray	Shoveler	25	M		King Edward M. Co	Jasper	Fall of material into shaft	
August 26	Marion Peek	Hoister man	35	M	5	Carmean-Squires No. 86	Jasper	Breaking of electric hoist	
October 9	Henry McGill	Superintendent	45	S		Little Frances Mining Co	Jasper	Struck by boulder	
December 13	Asa Grimstead	Shoveler	22	S		Symmes Mining Co	Jasper	Fall of boulder from roof	
December 16	Ollie Reed	Machine helper	27	M		Home Run Mining Co	Jasper	Fall of rock	
December 27	Frank Kirkendall	Shoveler	18	S		O. F. & L. Mining Co	Jasper	Falling down shaft	5,000 00

Table 31—Lead and Zinc—Western District—Fatal Accidents, 1909.

Date of accident.	Name of injured.	Occupation.	Age	Married or single	Orphans	Name of operator.	County.	Nature of accident.	Amount of insurance.	Coroner's verdict.
Jan. 22	E. Gullett	Machine man	30	S		Bird Dog M. Co	Jasper	Explosion of powder		Death by explosion.
Feb. 5	Andy Hutson	Drill man	21	M	2	Prairie Chicken M. Co	Jasper	Explosion of powder		Accidental death.
Feb. 5	George Hutson	Helper	18	S		Prairie Chicken M. Co	Jasper	Explosion of powder		
Feb. 6	Mr. Killingsworth	Jig helper	35	M	2	Chicago-Joplin M. Co	Jasper	Fell into line shaft of jig		Accidental.
Feb. 24	Wesley Baker	Powder helper	27	M	1	Golden Glow M. Co	Jasper	Explosion of powder	$5,000	Accidental explosi'n
Feb. 26	Asa Griffin	Face man	34	M		West Seventh St. M. Co	Jasper	Fall of slab	10,000	Accidental.
Feb. 26	Robert Warren	Face man	32	M	1	West Seventh St. M. Co	Jasper	Fall of slab	10,000	Accidental.
Feb. 26	Jos. Morrison	Face man	28	M		West Seventh St. M. Co	Jasper	Fall of slab	10,000	Accidental.
Feb. 26	Harry Ritter	Face man	38	M	3	West Seventh St. M. Co	Jasper	Fall of slab		Accidental.
Feb. 26	Bertram Ritter	Foreman		M		West Seventh St. M. Co	Jasper	Fall of slab	10,000	Accidental.
Feb. 26	Gilbert Ritter	Face man	24	S		West Seventh St. M. Co	Jasper	Fall of slab	10,000	Accidental.
Feb. 26	Edward Allen	Manager	47	M		West Hollow M. Co	Jasper	Breaking of line shaft		Accidental.
Mar. 25	Ben Ray	Drillman	29	M		Scott-Coleman & Co	Lawrence	Struck by boulder	5,000	
Apr. 22	T. F. Gibbs	Superintendent	35	M	1	M. & B. No. 2 M. Co	Jasper	Caving ground	1,000	Accidental.
Apr. 22	C. E. Evans	Miner	32	M	6	M. & B. No. 2 M. Co	Jasper	Caving ground	7,000	Accidental.
Apr. 22	Geo. Bennett	Shoveler	22	S		M. B. No. 2 M. Co	Jasper	Caving ground	5,000	Accidental.
May 2	Bruce Larrabie	Machine helper	33	M	1	Grace Zinc Co	Jasper	Fall of rock	6,000	Accidental.
May 17	Andy Pardain	Shoveler	43	M	4	Red Dog M. Co	Jasper	Fall of rock	5,000	Accidental.
May 20	F. Asher	Shoveler	23	M	2	J. O. D. Rogers & Co	Jasper	Falling slab	5,243	Accidental.
May 25	W. Hayden	"Bruno" man		S		Coahuilla L. & Z. Co	Jasper	Falling slab	10,000	Due to negligence.
May 25	C. Green	Shoveler		S		Coahuilla L. & Z. Co	Jasper	Fall of slab	10,000	Due to negligence.
May 25	D. Hays	Machine helper		M		Coahuilla L. & Z. Co	Jasper	Falling slab	10,000	Due to negligence.
May 25	B. Ross	Shoveler		M		Coahuilla L. & Z. Co	Jasper	Falling slab	10,000	Due to negligence.
June 4	H. C. McKenzie	Ground boss	31	M	1	Gibson M. Co	Jasper	Premature explosion		Accidental death.
June 16	E. Elgin	Machine helper	22	S		American Davy No. 1	Jasper	Caught by shot	5,000	Caught by shot.
June 19	F. M. Lawrence	Carpenter	55	M		Moler-Smith M. Co	Jasper	Crushed between car and timber		Accidental death.
June 22	B. A. Moody	Tub runner	25	M	1	White Dog M. Co	Jasper	Fall of boulder	5,000	Accidental death.
June 29	James Irick	Machine man	37	M	1	Oronogo Circle M. Co	Jasper	Premature explosion	5,000	Accidental death.
July 25	Charles Potter	Powder man	22	S		American Davy M. Co	Jasper	Explosion of powder		Accidental death.
July 30	Frank Sears	Shoveler	23	S		Cameron M. Co	Jasper	Fall of boulder		Accidental death.
Aug. 2	L. M. Gardner	Superintendent	48	M	5	Wautauga M. Co	Jasper	Explosion of gas engine		Accidental death.
Aug. 7	John Darnell	Shoveler	45	M	2	Vesuvius M. Co	Jasper	Fall of boulder from tub	6,000	Accidental death.
Aug. 15	Elijah Bohannon	Machine man	35	M		Doniphan M. Co	Jasper	Fall of boulder		Accidental death.
Aug. 18	J. Welsh	Tub hooker	28	M	2	Silver Leaf Dev. Co	Jasper	Caught between two tubs	5,000	Accidental death.
Aug. 28	Aug. Witzanski	Superintendent	46	M	5	Slow Seven M. Co	Jasper	Explosion of boiler		Accidental death.
Aug. 28	George Strain	Engineer	47	M	5	Slow Seven M. Co	Jasper	Explosion of boiler		Accidental death.
Sept. 11	Elmer Anderson	Shoveler	37	M	6	Silver Leaf Dev. Co	Jasper	Fall of slab from roof	10,000	Accidental death.
Sept. 18	Wayne Hawkins	Miner	50	M	6	Knowles, Campbell & Co.	Lawrence	Fall of slab	5,000	Unavoidable acc'dt.
Sept. 18	James Knowles	Miner	28	M		Knowles, Campbell & Co.	Lawrence	Fall of slab	5,000	Unavoidable acc'dt.
Sept. 18	Walter Welch	Miner	27	M	2	Knowles, Campbell & Co.	Lawrence	Fall of slab	5,000	Unavoidable acc'dt.
Sept. 18	John Erwin	Miner	25	M	3	Knowles, Campbell & Co.	Lawrence	Fall of slab	5,000	Unavoidable acc'dt.

LEAD AND ZINC—WESTERN DISTRICT—FATAL ACCIDENTS, 1909—Continued.

Date of accident.	Name of injured.	Occupation.	Age	Married or single	Orphans	Name of operator.	County.	Nature of accident.	Amount of insurance.	Coroner's verdict.
Oct. 13	Lee Walker	Tub hooker	21	S	..	Halloween M. Co	Jasper	Unknown cause	....	Accidental death
Oct. 14	Tom Endy	Shoveler	24	S	..	American Z., L. & S. Co	Jasper	Fall of slab	....	....
Oct. 14	Leonard Hibbs	Tub runner	16	S	..	American Z., L. & S. Co	Jasper	Fall of slab	....	....
Oct. 27	Joseph Morgan	Mule driver	23	S	..	Oronogo Circle M. Co	Jasper	Fall from cage	....	Accidental death.
Oct 27	C. Goodwin	Shoveler	30	M	..	Osceola L. & Z. Co	Jasper	Fall of drill column	5,000	Accidental death.
Nov. 1	Clyde Douglas	Machine helper	21	S	..	Smith & McKibbon	Jasper	Fall of rock	....	Accidental death.
Nov. 3	J. C. Harrison	Helper	26	S	..	Electrical Z. & L. Co	Jasper	Explosion of dynamite	10,000	Accidental death.
Nov. 3	F. Newton	Powder man	27	M	..	Electrical Z. & L. Co	Jasper	Explosion of dynamite	10,000	Accidental death.
Dec. 13	Chas. Brough	Shoveler	21	S	..	Pilot L. & Z. Co	Newton	Fall of rock from tub	10,000	Accidental death.
Dec. 14	Jas. Otto Chubb	Shoveler	35	M	1	Cecile Murphy M. Co	Jasper	Fell into shaft	5,000	Accidental death.
Dec. 30	Chas. Davis	Shoveler	17	S	..	Alabama No. 1	Jasper	Fall of slab	....	Accidental death.
Dec. 30	James Doty	Shoveler	21	S	..	Alabama No. 1	Jasper	Fall of slab	....	Accidental death.

LEAD AND ZINC MINE ACCIDENTS, 1909.

WESTERN DISTRICT, FATAL.

January 22d—Bird Dog Mining Company, Joplin; E. Gullett, age 30; occupation, machine man. Death caused by powder explosion. Gullett and his partner, Richardson, were loading back breast hole when the explosion took place. The operators, in the report of the accident to the department, say the cause of the accident is not known. Gullett received injuries from which he died a half hour after the accident occurred.

February 5th—Prairie Chicken Mining Company, Joplin; Andy Hutson, age 21; occupation, drill man; George Hutson, age 18; occupation, helper and tub man. No details of the accident in which these two men lost their lives are given in the report to this department, except that the accident was the result of powder explosion.

February 6th—Chicago-Joplin Mining Company, Joplin; Killingsworth, age 35; occupation, jig helper. Report of this accident was made by W. W. Wampler, agent for the mining company. The given name of the deceased is not known, and the report says that Killingsworth fell into the line shaft of jig, receiving injuries from which he died two days after the accident occurred.

February 24th—Golden Glow Mining Company, Webb City; Wesley Baker, age 27; occupation, powder helper. He was discharging the duties of "powder monkey" when from some unknown cause a premature explosion occurred. Baker was mangled about the face, arms and lower limbs, and one leg was broken in three places, necessitating amputation. He died just twelve hours after the accident.

Remarks by Inspector Wallace—It seems that this is one of the strange and unexplainable premature explosions that sometimes occur in the handling of high explosives. After close examination, no cause can be assigned unless it would be "imperfect mixture" in the particular stick of dynamite the deceased was in the act of running down, or placing in position, at the time of the explosion. The powder was of a standard grade, in general use throughout the district. The hole had been "squibbed" and "blown out" some two and a half hours before the accident occurred, and could not have been hot. Baker was using a wooden tamping bar of regulation pattern, and at the time of the explosion was not tamping, but simply placing the powder in position. The drill hole was smooth, and as it was a stope hole, was slightly damp. The deceased was experienced in this work.

February 26th—West Hollow Mining Company, Joplin; Edward Allen, age 47; occupation, manager. Accident due to breaking of line shaft.

Remarks by Inspector Wallace—I attended the inquest, and from the facts developed, consider it a plain case of accident. A centrifugal pump was being operated in the shaft by means of a line shaft driven by an engine. This line shaft consisted of joints or sections about 14 to 20 feet long, coupled together by flanged couplings. It seems that the bolts stripped from one of these flanged couplings near the top of the shaft, and the engine running away, loosened the top half of the coupling which stripped from the shaft and fell. striking Allen, who had gone down the shaft to pack the pump, knocking him into the sump, where there was about fifteen feet of water.

FEBRUARY 26th—West Seventh Street Mining Company, Joplin; Asa Griffin, age 34, married; occupation, face man; Robert Warren, age 32; occupation, face man; Joe Morrison, age 28, married; occupation, foreman of night shift; Harry Ritter, age 38, married; occupation, face man; Bertram Ritter, occupation, ground foreman; Gilbert Ritter, age 24, single; occupation, face man. Death due to the fall of a huge slab from the roof of the drift. At the time of the accident eleven men were in the ground working on a crib of timbers with which it was intended to strengthen the roof.

Remarks by Inspector Wallace—The drift in which the accident occurred had been driven in comparatively hard ground up to within about thirty or forty feet of the heading, where the formation changed, becoming much softer, especially on the left or north side of the drift, being strata or layers of flint intersticed with seams of soapstone and selvage (what is known in local parlance as soapstone slips), with large openings or pockets of soft mud distributed at intervals—very treacherous ground. It seems that soft places of this character are prevalent in this locality, several having been encountered in the Paragon mine adjoining the West Seventh Street mine on the west. The drift was some twenty-five feet wide at the bottom, thirty-five feet wide through the center and about twenty-five feet high. In the northeast or left corner a fault in the strata had been encountered, the strata pitching down to the north at an angle of about 60 degrees. In this fault lay the cause of the accident.

In driving the drift a slab of this strata, extending almost across the roof of the drift and running down into the wall to the left, had parted from the roof proper, being cut by a seam of soapstone, and was seen to be loose. For several days the men, working under the direction of the superintendent and ground foreman, had been shooting and pulling at this slab, and had succeeded in taking down almost one-half of it. The testimony at the inquest developed that the remaining portion of the slab had appeared to be fixed in position and firmly imbedded in the side of the drift; therefore, it was decided not to shoot it down, as that would tend to widen the drift, already too wide for such formation, but to build a pen of logs under it, after the pen was built filling in between the pen and the wall with loose boulders and so forming a pillar. William Owen, the superintendent, stated that he and Bertram Ritter, the ground foreman, had first decided to leave a pillar in this corner of the drift, but upon bringing up the stope had found that the material under the fault was so soft that it would be useless as a pillar. Mr. Owen also stated that Ritter had not favored building a pen, holding that, in his opinion, the slab was firmly fixed and the building of a pen would be unnecessary expense. Mr. Owen insisted that the pen be built as a measure of safety. A few hours after the work of building the pen had been started, and when it was some six or seven feet high, the slab fell, with no warning whatever, crushing the men who, with the exception of Owen and Owsley, who had just stepped toward the timber pile to select another log, were all gathered directly under it and around the pen.

Upon examination I found that the slab, instead of being firmly imbedded in the side of the drift, extended into the side only about two feet, the lower end resting in a mud pocket. The work they had done trying to take it down had probably loosened it until it was just ready to fall.

These men all bear the reputation of being first-class miners with years of experience in the mines, especially the Ritters—one of whom, Bertram Ritter, was ground foreman—who have practically grown up in the mines around Joplin. Joseph Morrison was ground foreman on the night shift. Mr. Owen, the superintendent, has had twenty-five years' actual experience in mining. I cannot understand how these men could make such a fatal mistake—it was undoubtedly a mistake, because it does not stand to reason that Ritter would have knowingly worked his own brothers and brother-in-law in and under a death trap. The verdict of the coroner's jury was "accidental death from falling boulders." I made recommendations as to the proper timbering of this mine, and will require such timbers to be placed before the mine is again put in operation.

MARCH 25th—Scott-Coleman and Company, Aurora, Lawrence county; Ben Ray, age 29; occupation, drill man. Struck by boulder supposed to have fallen from side of drift, and instantly killed.

Remarks by Inspector Wallace—Deceased was a drill runner, and was the head man on the night shift. On the night of the accident his helper did not come to work, so he could do no drilling. He "squibbed" the holes drilled by the day shift and then loaded them. After that was done there was no other work for him to do except to fire the loaded holes when he went off shift. He came down from the heading and was helping the shovelers fill their tubs in turn (there were two shovelers) and had filled one tub, and was sitting on a pile of loose dirt at the foot of the stope, waiting for the return of the other shoveler, when the fall came and killed him. The fall was not one large slab or boulder, as is generally the case, but was a mass of loose material, the largest pieces weighing no more than forty or fifty pounds, just about enough to fill an ordinary mining tub. This material came from the side of the drift, just at the arch of the roof, and had probably been jarred loose by the "squibbing" of the holes in the heading. The drift in which the accident occurred is well cut, being thirty feet high, but very narrow. The roof is smooth and well trimmed, but the material forming the sides is of a loose conglomerate nature, containing much selvage, and requiring frequent trimming. This drift had been carefully trimmed several days before the accident.

APRIL 22d—M. and B. Mining Co. No. 2, Duenweg, Jasper county; T. F. Gibbs, age 35; occupation, superintendent; C. E. Evans, age 32; occupation, miner; George Bennett, age 22; occupation, shoveler. The ground caved in, crushing down the timbers, which caught the men under same. Evans and Bennett were killed instantly, but Gibbs lived about eighteen hours, dying shortly after he was released from the weight that held him.

Remarks by Inspector Wallace—The point where the accident occurred is at the junction of the runway drift from the shaft with the timbered drifts in the soft ground. Here two drifts had been turned off from the main drift north and cut parallel with same, making the width of the ground standing on timbers some 36 feet. It must be remembered that the large drift cut by the original M. and B. Co. had caved in, and that these drifts were cut skirting the edge of the caved ground where there was a great deal of weight. It is also my opinion that in some of the drifts the ground was "pulled" as long as the dirt would run, leaving an opening above the timbers. The runway drift had been cut in standing ground and originally was not timbered, but, some time before the accident, a line of "snowshed" had been put up to protect the men from small rocks that might fall from the roof. This runway drift did not cave in, but when the drifts further on, to the north and east, caved in, the snowsheds were knocked down by the rush of caving dirt and boulders and the men were caught by the falling timbers. This was evident from the position in which the timbers were lying and the fact that none of them, at this point, were broken. That Gibbs was not instantly killed is due to the fact that the timbers in falling were locked above him in such a way that he was to some extent protected. The testimony of witnesses developed that the ground had been settling and some of the timbers taking weight for several days prior to the accident, and on the morning of the 22d, just before going out at noon, a cap had been noticed to be breaking. Measurements were taken for a false post for this cap. A post was cut to this measure, but, upon returning to the ground after dinner, the cap had settled still further and the post was too long. The men killed were engaged in sawing off the end of this post while the other men were standing further back toward the shaft when the crash came. As stated above, the men were caught by the falling snowshed timbers as they were running toward the shaft, and if the timbers in the runway drift had been wooded up to the roof, keyed and braced, as they should have been, every man would have escaped. Be that as it may, those in charge were to blame in allowing the men to continue work after the ground gave such unmistakeable warnings. If the drifts had been cut in new ground and all the timbers had been keyed up to the roof, it would have been different, and a broken cap or two would have been no cause for alarm, as properly timbered ground does not break down with a crash, but comes down gradually. Where there are open spaces above the timbers there is always danger that the falling of an extra large slab or boulder may cause a sudden cavein. Almost all of the serious accidents in soft ground in this district have been due to this cause.

MAY 2d—Grace Zinc Company, Joplin; Bruce Larrabee, age 33; occupation, machine helper. Larrabee was moving a ladder and loosened a small rock in the wall which fell, striking him on the head and inflicting serious injury from which he died two days later.

Remarks by Inspector Wallace—Larrabee, with his machine man and several others, was engaged in trimming a ledge when the accident happened. They were using a light two-piece extension ladder, which was resting upon a pile of dirt broken by the last shots fired and leaning against this ledge. One of the men on the ladder, trimming, came down to shorten the ladder. The ladder was raised from the ledge, Larrabee holding it on one side and one of his associates holding it on the other, while another workman stepped on the ladder to loosen the catches so that the ladder could be lowered. This forced the ladder out of balance and it fell back against the ledge, and when it was raised again a rock weighing about five or ten pounds, that had probably been dislodged by the fall of the ladder, fell from the ledge, striking Larrabee on the back of the head, rendering him unconscious. He was taken at once to St. John's hospital for treatment, where he remained until his death two days after the accident occurred.

MAY 17th—Red Dog Mining Company, Webb City; Andy Pardain, age 43; occupation, shoveler. Instantly killed by being struck on the head by falling slab from roof.

Remarks by Inspector Wallace—The accident resulting in the death of Pardain was indirectly caused by the knocking down of a pillar near a water course, causing a large circular shaped slab to come down, the break extending in every direction until caught up by surrounding pillars. After the fall occurred, the roof and edges of the slab between the pillars were trimmed and pronounced safe. This trimming was done on the day before the accident happened. At about nine o'clock a. m. on the following day Pardain, who was a shoveler, left the track upon which he was working and stepped over about forty feet to the right, between two pillars, to get a pick that had been left there the day before, when, with no warning whatever, a large slab fell from the roof, killing him instantly. The slab broke just at the edge of the pillar nearest which he was standing, the break running almost across to the other pillars and back between the pillars some twenty feet. These pillars were about twenty-five feet apart. For a fall to occur so soon after the trimming was done seems to me to indicate that it was not done thoroughly.

MAY 20th—Morgan 40 Mine, Carterville; Finis Asher, age 23; occupation, shoveler. Instantly killed by falling slab or part of arch between pillar and roof, supposed to have been a seam in rock not noticeable until after accident.

Remarks by Inspector Wallace—I found that Asher had been killed by the falling of the arch of a pillar, the mass that fell weighing probably five tons. When struck down by the falling rock deceased, who was a shoveler, was working in a drift about 14 feet high and directly between two pillars which were some 15 to 18 feet apart. The pillar on the right, and nearest which he was working, was arched at the top, and it was evident that this arch was cracked or seamed near the junction with the body of the pillar, and there was also a mud seam between the top of the arch and the roof. The testimony at the inquest developed that none of the men had noticed this crack or seam, although several of the men had worked at this point. A Mr. Mills, one of the machine men, testified that, at the request of J. P. Miller, the ground foreman, he had trimmed the roof and pillars at this place on May 19th, and that at that time he had sounded this arch; that it sounded solid, and he had considered it safe. On account of the narrowness of the drift between the pillars and the hardness of the ground (sheet ground), this point was considered one of the safest in the mine, and I was informed by men who worked in drifts nearby that they went to this place when firing shots and squibs in other drifts.

MAY 25th—Coahuila Lead and Zinc Company, Carterville; W. Hayden, age not reported; occupation, "bruno" man; C. Green, age not reported; occupation, shoveler; D. Hays, age not reported; occupation, machine helper; B.

Ross, age not reported; occupation, shoveler. All were instantly killed by a falling slab from the roof of the drift.

Remarks by Inspector Wallace—I visited the mine on the same day of the accident and attended the inquest. The testimony at the inquest developed that some two weeks before the accident occurred a loose slab had been noticed in the roof, and some of the shovelers had quit work in this drift on account of it. The ground foreman, Mr. Lewis, was notified of the dangerous condition of the drift, and he ordered certain of the machine men to take down the slab and trim the roof. Three holes were drilled in the slab and fired, breaking down part of it and leaving the fan-shaped section mentioned above. The edges of this section were trimmed, and it was left as being safe. James Stacks, a miner of thirty years' experience, who had charge of the work, said that he felt that it was safe, as it seemed to be bound between the pillar and the arch, was so thick and had no cracks in it; otherwise he would not have left it, as, being the stope machine man in these drifts, he had to work under it himself. Mr. Lewis said that he examined the slab every morning, and it looked all right to him.

Others of the men stated that they had never considered it safe, and were afraid of it. Following is a copy of the verdict of the coroner's jury: "We, the jury, find that David Hayes, C. Green, W. Hayden and B. Ross came to their death on May 25, 1909, at the Coahuila Mining Company, Jasper county, Missouri, from injuries received when struck by a falling slab. We further find that the company was negligent in not removing slab." Signed by the coroner and five jurymen. The other juryman gave the following verdict: "I, as juryman, find that the above men came to their death from accidental cause."

Commenting upon this accident, I will say that places in any mine about which there is any doubt as to safety should be given immediate and careful attention, and if there are any slabs in the roof, tight or loose, they should be taken down or else timbered, so that they cannot fall.

JUNE 4th—Gibson Mining Company, Carthage; Henry Clay McKenzie, age 31; occupation, ground boss. Death caused by premature explosion of powder.

Remarks by Inspector Wallace—McKenzie, who was ground boss and also powder man, with his helper, J. Henderson, was in the act of lighting a round of three shots and four squib shots when the explosion took place. The front breast hole of the round had been fired the night before, leaving three holes, roof, back breast and stope. The four squib shots were just around a break and about twenty feet away. In loading the roof hole it was found that in squibbing same the night before it had been deepened about ten or twelve inches, and that the fuse would not quite reach out when the shot was down. When the time came to fire the shots, McKenzie placed the shot (stick of powder with primer imbedded in it) part way down the roof hole, and told his helper to light the fuse, and he would run the shot down. This was done, and McKenzie then put in two cartridges of sand tamping and tamped the hole. He then told his helper to go around the break and light the squibs while he lighted the back breast and stope shots. He had evidently lighted the back breast hole and was stooping to light the stope when the explosion occurred. Henderson stated that after lighting the roof hole he had run the twenty feet to where the squibs were and had lighted only two of them when the roof hole exploded; therefore, he thought the fuse must have been defective, burning much faster than it should. All of the fuses were cut to measure seven feet long, and were then trimmed so that the holes would go in the order desired, the fuse in the roof hole being trimmed the most, as it was timed to go first.

In my opinion this accident could have happened through either one of two causes, viz.: defective fuse burning much faster than it should or McKenzie and his helper underestimating the time passed and staying too long. Arguments can be advanced both pro and con in either case. I had the fuse removed from the stope hole and found it to be six feet and seven inches long. I burned this fuse, first cutting off one inch in order to respit it, and found that it burned in four minutes and ten seconds from time of lighting to explosion of the cap, an average of about thirty-eight seconds to the foot. I also tested a section of the coil of fuse from which the fuse for these shots had been cut and found it to be up to the standard. On the other hand, McKenzie was known to me personally to be a first-class miner, careful and experienced in the handling of explosives. Then it hardly seems possible for the fuse in the roof hole, burning at proper speed, to have burned up in the time required for Henderson to run twenty feet and light the two squibs. Also, if the fuse in the roof hole had burned very long, McKenzie would certainly have had time to light the stope hole. The true cause will probably never be known, but I am inclined to believe that it was defective fuse.

JUNE 16th—American Davey No. 1, Carterville; E. Elgin, age 22; occupation, machine helper. Death caused by remaining in close proximity to shots when same were fired.

Remarks by Inspector Wallace—I made an investigation the following morning and find that the accident occurred as follows: There is a large pillar about sixty feet long and twenty to twenty-five feet thick on the west side of the shaft, and just opposite the shaft a pump seat had been cut in this pillar. In order to shorten the distance between the west faces and the shaft it was decided to cut a runway through the pillar, using the old pump seat as part of same. Six holes were drilled in the pillar (drilling through into the pump seat) from the side opposite the shaft, the intention being to break through into the pump seat with this round of shots. In order to give a better understanding of this accident, will state that all the employes in this mine except the machine drill men go off shift at 4 o'clock p. m., the drill crews going off at 4:15. The six holes in the pillar were loaded and ready to fire at 4 o'clock when the shovelers went out. Ordinarily all shots are fired in these mines by the powder men on the night shift, when all employes are out of the mine, but this being special work, which was being completed with all possible speed, it was decided to fire the shots at once, so that the dirt broken could be removed by the night shift, thus making room for more drilling on the following morning. Mr. J. H. Elliott, the ground foreman, stood at the shaft checking off the machine crews as they came down to go out, and sending them back up the drift to a place of safety behind two pillars. Elliott stated that Elgin and Brand were the last men in, and that he told them that the shots in the pillar were to be fired at once, and for them to go back with the other men, some of whom were only about fifteen feet away, and who corroborated his testimony as to warning them. Elliott stated that Elgin and Brand said "All right," threw down the dull steel which they were bringing in, and turned as if to follow the other men. He himself went around the pillar to assist White and Hawks in lighting the shots. After lighting the shots they yelled "Fire and Gone," so that anyone within two hundred feet could have heard them, and then went up to where the other men were. The first that was known of Elgin and Brand not being with the rest of the crew was when their cries were heard after the explosion of the first shot. They had evidently gone into the pump seat and were sitting or standing directly in front of the place where the shots broke through. Elgin had been to the shaft that afternoon and watched White and Hawks drilling the holes and knew just exactly where they were and what they were intended for. Without doubt these men must have misunderstood the warning given them by Elliott, because it stands to reason that no sane man would deliberately stand in front of shots while they were being fired. Brand was too badly injured to testify at the inquest, but he stated to me that he did not hear Elliott's warning, and was standing at the shaft waiting for the tub to come down so that he could go out. This accident could have been easily avoided by sending all the men out except those who were to light the shots.

JUNE 19th—Moler-Smith Lead and Zinc Company, Carl Junction; F. M. Lawrence, age 55; occupation, carpenter. Deceased was riding on front of tramway car when he was caught between the top of car and a 2 by 6 rafter in the top of derrick of the mill and crushed to death.

Remarks by Inspector Wallace—This accident can hardly be classed as a mine accident, as Lawrence was not a miner and the accident occurred in the mill. Mining operations on this property are carried on in a large open cave, some one hundred yards in diameter and about seventy feet deep, the sides of which stand at an angle of from 45 to 60 degrees, the dirt being loaded into cars by a steam shovel, also hand shovelers, and hoisted up the tramways into the hoppers of the mills, of which there are two. The hoists are located in the center of the cave or pit and are operated by gas engines. Mill No. 2 has been in operation for some time, but mill No. 1 has only recently been moved to its present position near the edge of the cave, and Lawrence and other carpenters were engaged in putting on the finishing touches preparatory to starting up. On the morning of the accident Lawrence and his helper, Turner, were told to place a shieve (guide shieve for the hoisting cable) in position just where the tramway entered the hopper. This shieve was large and heavy, so they did not want to carry it up the stairs of the derrick, so placed it in the tram car, and then climbing on themselves, gave the hoisting signal. They did not get on the car down in the cave, but at the surface. When the car entered the derrick it was moving very slowly, and Turner, glancing over his shoulder, saw that there was not sufficient clearance between the top of the car and a two by six brace just ahead to permit their passage. He called to Lawrence to stoop down, and did so himself, but for some reason Lawrence did not stoop—probably did not realize the danger—and was caught between the top of the car and the brace. His injuries were such that he died in about twenty minutes. These two men had done most of the construction work in the derrick, having placed this very brace in position, and should have known better than to ride on the front of the car. Riding on the tram cars is strictly against the rules of the company, but I am informed that the superintendent was himself giving the signals for their ascent. Lawrence and Turner should have placed the shieve in the car, had it hoisted up and then walked up themselves. Verdict of the coroner was "accidental death."

June 22d—The White Dog Mining Company, Joplin; B. A. Moody, age 25; occupation, shoveler. Death caused by fall of boulder from roof, crushing his head, bruising right shoulder and breaking left leg above ankle.

Remarks by Inspector Wallace—I was notified of the accident by telephone the same evening and made an investigation the next morning. I found that Moody, who was a tub runner, had been detailed to help Cooper, a shoveler in the drift in which the fall occurred, and had only been working a short time when a cracking sound was heard and all ran for a place of safety. Cooper ran to the face of the drift and so escaped, while Moody ran toward a pillar and was caught by the falling slab. The slab that fell was about a foot thick, sixty feet long and fifty feet wide. On the morning of the accident a small part of this slab was noticed to be loose near the face of the drift, and Moore and Garner, machine crew in this drift, were instructed by the ground foreman, Shady Lee, to take it down. Slab bars were secured and an attempt was made to throw the slab out, but it was unsuccessful, only one small piece being prized down. It was then decided to leave the slab as it was, thinking it would be further loosened by the shots which were to be fired in the face that night, and could be easily taken down on the following morning. Mr. Lee and Mr. Moore stated that they had no idea that the slab was loose over the entire drift, and had never expected to get down a piece more than ten or fifteen feet square. It is an evident fact that, as this slab fell so soon afterward, it was loose at that time, and if Lee had sounded the roof he would have demonstrated this fact, and could have taken the men out of this drift until such time as it was made safe. In the first place, the drift was not sufficiently pillared, it being some 90 feet or more from the point pillar to the face and 60 feet between the two side pillars. In my opinion, this slab first loosened in the center of the drift, bagged down, and becoming looser and looser from the jarring of shots fired each night, finally fell.

June 29th—Oronogo Circle Mining Co., Oronogo; James Irick, age 37; occupation, machine man. Instantly killed by premature explosion of powder in splitter hole.

Remarks by Inspector Wallace—There was only one man with Irick at the time of the explosion, and that man was Scott Jackson, his helper, who miraculously escaped injury, although standing within fifteen feet of the shot at the time it exploded. Jackson states that he and Irick had drilled a relief hole (known as a splitter) in the stope about four or five feet from the bottom, the hole being drilled about twelve feet deep. After drilling the hole they had squibbed it six times, the last time using twenty sticks of powder, which partially broke the hole and caused them to lose it. In other words, the rock was so badly shattered that the original drill hole was lost, there being only a large crack or crevice where the drill hole had been. This squib was fired about 3:20 p. m. After losing the drill hole they "spooned" out a hole in the shattered rock, following the original drill hole to a depth of about six feet. They then decided to load this hole and shoot it. Jackson cut forty sticks of powder, laid them where Irick could easily reach them in loading, and then went down the drift to disconnect the air line, cover the valve, etc., preparatory to shooting. In the meantime Irick was loading the hole. Jackson had just come back up the drift, to a point about fifteen feet from where Irick was loading the hole, and was stooping over ceiling the air hose when the explosion occurred.

Irick had not put the primer in the hole—in fact, they had not yet prepared the primer and no caps were near the powder. Both had been very particular when spooning out the hole to test the end of the spoon to see if the hole was hot, and Jackson states that the end of the spoon was not even warm. A wooden tamping bar was used in loading the hole. Irick was considered one of the most careful men in the employ of this company, especially in the handling of explosives.

There are several theories that may be advanced as to the cause of this accident, such as "hot hole," "imperfect mixture of powder," "rough handling of powder in loading," or that "the gases formed by the explosion of the last squib were imprisoned to a certain extent when the hole was lost. Being released by the spooning done by Irick and Jackson, these gases were flowing out of the crevice, spoken of above, and were fired by the flame of Irick's lamp, the powder in place in the hole being in turn fired by the burning gases." In view of the statements made by Jackson and my own investigation. I am inclined to believe the latter theory to be the more plausible.

JULY 25th—American Davey No. 5, Carterville; Charles Potter, age 22; occupation, powder man and machine man. Killed by explosion of powder while blowing out a failed hole.

Remarks by Inspector Wallace—I made an investigation of this accident and found the facts to be as follows: Four men were at work with two air drills cutting a pump seat near the bottom of the shaft. One round of holes had been drilled and fired July 23d, and the second round, consisting of eight holes, was drilled and fired on July 24th. These holes were fired with fuse and the men remained near the collar of the shaft to count the holes as they went. They counted six shots and one primer, leaving two holes that were known to have failed. Potter, who had charge of this work, went back down the shaft, after the smoke had cleared away, to make an examination. He reported that the round had failed, and that some of the holes would have to be reloaded and fired again. It was decided to do this work on Sunday morning, July 25th. Lynch, who was helping Potter, stated that soon after coming on shift on the morning of July 25th, Potter connected the blow pipe to the air line and started to blow out one of the failed holes. He had no sooner turned on the air and shoved the blow pipe into the hole than the explosion occurred. Lynch, who was injured in the explosion, stated that he was sure Potter did not first "spoon" out the hole to see if there was powder in it. Mr. Polhemus, the superintendent, told me that Potter was considered one of the most careful and competent men in their employ, and, being a powderman, was thoroughly familiar with the handling of explosives. This being the case, Potter must have thought there was no powder in the hole or else he did not stop to think at all, for it seems that no sane man would shove a blow pipe into a hole and then turn on a full head of air, knowing that the hole was loaded with dynamite. The mine superintendent stated that an electric battery was furnished with which to fire the holes on this work, but that it was optional with the men whether they used the battery or fuse.

July 30th—Cameron Mining Company No. 2, Sarcoxie; Frank Sears, age 23; occupation, shoveler. Instantly killed by being struck by falling boulder from roof.

Remarks by Inspector Wallace—I went to Sarcoxie on July 31st, attended the inquest and made an investigation of the accident, but could not inspect the ground, as one of the large pumps was shut down for repairs and the mine full of water. On the morning of August 2d I again visited the mine and made a thorough inspection of same. Sears was killed by a slab some 15 feet wide, 20 feet long and about 16 inches thick in the center and tapering at the edges. This slab fell from the roof with no warning whatever. Charles Osborne, the ground foreman, testified that on the morning before the accident occurred he had sounded the roof in this drift, and it had sounded perfectly solid. That on the morning of the accident he had gone up on the loose dirt on the stope in this drift and examined the roof carefully and could see nothing loose, no seams or anything of the kind. This testimony was substantiated by other men who worked in the drift and who had seen him examining the roof. All of the men testified that they had considered the drift safe, and that the ground was carefully looked after, but I can hardly see how a slab of that size could become loose enough to fall without giving some evidence that it was loose to one making a careful examination. The drift in which the fall occurred is about 25 feet wide and 30 to 35 feet high. The roof is not a good one by any means, being a loose, slabby white flint cut by many seams and pockets, and in the drift where the slab fell I noticed a great deal of water coming through the roof. This water would tend to loosen the ground along natural seams and cause slabs to fall, and it also makes proper inspection of the drift difficult.

August 2d—Wautauga Mining Company, Joplin; Leander M. Gardner, age 48; occupation, superintendent. Death resulted from explosion of gas engine.

Remarks by Inspector Brown—I visited the scene of the accident two hours after it occurred. I found that the mill had been shut down for repairs on the engine. These repairs were made at noon and the regular engineer had gone home for dinner, leaving Gardner to start the engine at one o'clock, and this he was in the act of doing when the explosion occurred. Upon investigation I found that Gardner had charged the engine with gasoline and had applied 165 pounds of compressed air; from this the engine made two revolutions, but the sparker failed and the gasoline was not ignited. Gardner then gave it the second charge of gasoline and again applied the 165 pounds of air, when the explosion occurred. In my opinion the natural gas and gasoline was ignited and exploded when the engine was on dead center, causing the engine to part between the wheels and cylinder. The cylinder end struck Gardner and carried him through the building. He died from injuries twenty minutes later without regaining consciousness. The coroner's jury returned a verdict of "accidental death."

August 7th—Vesuvius Mining Company, Carthage; John Darnell, age 45; occupation, shoveler. Struck on head by falling boulder from loaded tub and instantly killed.

Remarks by Inspector Wallace—Darnell had filled his tub and brought it down to the shaft to be sent out by the hooker. The tub was hooked on the rope, steadied and sent out as usual, the empty tub being rolled on Darnell's car by the hooker, who, in so doing, threw one wheel of the car off the track. Darnell remained almost under the shaft, getting his car back on the track while the full tub was being hoisted, and was struck by rocks that fell from the tub when it bumped while being pulled through the well hole in the derrick. The hoisterman told me that when the tub came in sight he saw that it was oscillating, caused by its being unevenly loaded, and that he shut off steam until the tub was almost stopped when it bumped. This statement was corroborated by the ground foreman who was in the derrick at the time. I examined the well hole and found ample clearance under ordinary conditions. There is no evidence of carelessness upon the part of anyone unless it was Darnell himself, who was careless in remaining under the shaft while a full tub was being hoisted.

AUGUST 15th—Dauphin Mining Company, Carterville; Elijah Bohannon, age 35; occupation, machine man. Killed by falling slab from roof of mine.

Remarks by Inspector Wallace—In my opinion the immediate cause of this accident was insufficient trimming of the roof, but the condition that made this accident possible was due to improper opening up or first cutting of the mine. Between the limestone which, judging from shafts and drill holes, seems to overlay this ground and the proper cap rock of the drifts, are some eight or ten feet of white flint (cotton rock) and yellow flint cut by mud seams and pockets. The air drift first driven between the two shafts was driven at too high a level, the roof of same cutting into this formation some two and a half to three feet, and the roof of the mine as opened up from the air drift seems to have been made at the same level, naturally resulting in a very loose and slabby roof, almost impossible to keep properly trimmed and safe. Between the time when the mine was closed down by the Trinity Company and again started up by the present operators the water was allowed to rise and fill the workings, thoroughly saturating this roof and leaving it in such condition that it would not stand the heavy shots fired in taking up stope. The pillars in the mine had been left fairly close together, but not close enough for such a roof formation. The slab which fell on Bohannon was about five feet long, four feet wide and six inches thick. Deceased, who was a machine man in another drift, had completed his work for the day and had walked over in this drift to see how the drill crew working there were getting along. He had been there only a few minutes when the slab fell without warning, with above results. A slab had been trimmed or rather shot from the roof of the drift in which the accident occurred some three weeks before the accident. This trimming was done by Bohannon and James Jones, who trimmed the roof until they thought it was in as good condition as they could get it. Later, on the day before the accident, another pair of men shot down more from the edge of this slab and trimmed by jabbing the roof and the edge of the slab with a prod pole, but they did not get up on a ladder and make a careful examination. When asked why they did not do this, they said that the ladder furnished by the company was so flimsy that they were afraid to trust themselves upon it. A good strong ladder, long enough to reach the roof in any drift, should always be a part of the ground equipment of every mine where the drifts are more than ten or twelve feet high. The rock that killed Bohannon fell from the broken edge of the original slab.

August 18th—Silver Leaf Development Company, Webb City; J. Welsh, age 28; occupation, tub hooker. Welsh had steadied full tub and started to remove empty tub from the platform when the full tub fell back into the shaft, crushing him between the two tubs, sustaining injuries from which he died about twenty minutes after the accident occurred.

Remarks by Inspector Wallace—I examined the hoists and found same in good condition. It is a Freeman, first motion, double engine hoist, and is practically new, having been in use only about two weeks. This accident was plainly caused by the hoisting engineer, through carelessness or mistake, not setting the friction lever tight enough when starting to raise the full tub. It had only been raised a few feet from the steady mark when he noticed it slipping back, and he did not have time to stop it before it struck Welsh.

August 28th—Slow Seven Mining Company, Webb City; August Witzanski, age 46; occupation, mine superintendent; George Strain, age 47; occupation, engineer. At about 7:40 a. m. a fifty-horse power boiler exploded, killing these two men instantly.

Remarks by Inspector Wallace—The boiler, boiler house and derrick were completely demolished by the explosion (there is no mill at this mine, the company being engaged in prospecting and opening up new ground), and the ground and shrubbery for many feet in each direction were covered with a grayish coating. It was evident that the boiler had exploded under very high pressure. The shell was torn into several pieces, not especially along the rivet lines, and the pieces were warped and twisted into all kinds of shapes. I examined several pieces of the shell and found no evidence of crystallization. From the testimony given at the inquest it seems that the boiler had just been purchased (second-hand) and installed, Mr. Witzanski, who was considered an expert engineer and pumpman, having been engaged in that line of work for over twenty years, making examination of the boiler and recommending its purchase. The boiler was filled on Wednesday and Thursday preceding the accident and was warmed up on Friday, the day before, steam being raised to forty pounds gauge pressure. The fire was banked Friday night, and on Saturday morning the fires were built up and preparation made to start the pumps. One of the witnesses testified that just before the boiler exploded he had heard a hissing noise, which seemed to come from the top of the boiler, and he had noticed steam escaping around the flues in the front head; that Witzanski and Strain had stepped to the front of the boiler, raised the soot doors and looked at the front head and flues around which steam was escaping—Witzanski remarking, "We can't fire this boiler today." They then went around to the side of the boiler where he could not see them, and soon afterward the boiler exploded. This witness also stated that about five minutes before the explosion occurred he had looked at the steam gauge and water glass, and that the former registered forty pounds pressure and the latter about one-half glass of water.

Taking this testimony into consideration, the only plausible theory that I can advance as to the cause of the explosion is that the water had in some manner leaked out of the boiler (some water had also evaporated by firing up the day before), that the gauge had become clogged, and, while it registered one-half a glass of water, there was in reality very little water in the boiler; that the sheets became very hot when the fire was built up, and that when Witzanski and Strain went around to the side of the boiler they started the boiler feed pump. The water from the pump striking the hot plates would instantly raise the pressure and explode the boiler. In my opinion, if there had been water in the boiler, steam would not have been issuing around the flues in the front head, especially the lower flues.

SEPTEMBER 11th—Silver Leaf Development Company, Webb City; Elmer Anderson, age 37; occupation, shoveler. Killed by falling slab from the roof of drift.

Remarks by Inspector Wallace—Upon being notified by telephone I went to the mine and made an investigation into the cause of the accident. I found that the drift in which the slab fell was one of the best cut drifts in the mine. There are some very wide drifts in this mine, but this one was not over thirty feet wide. The slab that fell was irregular in shape, breaking from a feather edge about ten feet from the heading, extending almost across the drift and back toward the shaft about twenty or twenty-five feet, until caught between two pillars. The break had started from a break in the cap rock, probably caused by a roof hole bedded too high. This hole had been trimmed out, and back toward the shaft it trimmed to a feather edge. It would certainly seem that, being loose enough to fall, this slab would show a seam or crack at the feather edge; but Mr. Maness, the superintendent, Mr. Allen, the ground foreman, and Mr. Nethercutt, the machine runner in that drift, all testified that they had examined the roof carefully, and that there was no crack in evidence. Maness and Allen stated that they examined this particular place on the morning of the day before the slab fell. Allen had looked it over on the morning of the day it fell, and Nethercutt, who worked in the drift every day, stated that he had done the trimming and had further examined the roof on the morning of the day of the accident, had sounded the roof with a "spoon," and it sounded all right to him.

The edge of the slab where it was caught between the pillars was much heavier than near the break, being about ten inches or a foot thick. It did not look tight, and I gave orders that it be taken down until it feathered out, or else clear through the drift.'

SEPTEMBER 18th—Knowles, Campbell and Company, "Daisy Bell" mine, Aurora, Lawrence county; Wayne Hawkins, age 50; occupation, miner; J. W. Knowles, age 28; occupation, miner; Walter Welsh, age 27; occupation, miner; John Erwin, age 25; occupation, miner. Killed by fall of large slab, breaking loose from an unknown seam without warning.

Remarks by Inspector Wallace—On Saturday afternoon, September 18, 1909, I was notified by telephone of this accident. Accompanied by Inspector Brown, I at once went to the scene of the accident, made an examination of the mine and consulted with the leaders of the rescue party as to the best methods of procedure. The ground was still settling and taking weight, rendering the work of recovering the bodies extremely dangerous, there being no safe road of escape in case of further caving of the roof. A ladder was placed in the old

White Rose shaft, about 150 feet northwest of the Daisy Bell shaft. Men were stationed with lights in the mouths of several drifts opening into the large drift in which the fall had taken place, and all possible precautions were taken to prevent a second accident. Work was continued at intervals until about five o'clock Sunday afternoon, during which time three bodies had been recovered, when it was decided to fire a large charge of dynamite in the open drift, hoping thereby to bring down all slabs and loose material from the roof and sides of the pillars, and to give the men confidence that what was not brought down by the shot was not loose enough to fall. After firing the shot it was necessary to wait from twelve to twenty-four hours (perhaps longer) for the ground to settle before again venturing into the mine; therefore, we returned to our homes, leaving instructions that work should not be resumed until the ground was perfectly quiet, and that after the fourth body was recovered the mine be closed down. Mr. Brown agreed with me that this is one of the most dangerous mines we have seen. The ground is cut in such a manner that we do not think it can be made safe. I notified the owners to this effect and warned them not to employ men to work in the mine—undertaking to do so, I would proceed by injunction. E. K. Johnson, Robert Horine and Ben Horine, operating as Johnson & Horine, own a first lease on the Daisy Bell mill and ten acres of the Decatur Zinc and Lead Company land. James Knowles, Wayne Hawkins, Walter Welsh and John Campbell, operating as Knowles, Campbell and Company, were also interested in the property as far as the ground is concerned, they having charge of the mining of the ore and Johnson & Horine the milling. The proceeds of the ore was equally divided between the two companies. The mine is entered through a shaft 130 feet deep, and there is a connection between the drifts of this mine and those of the White Rose mine on the west and the Uncle Sam mine on the east, neither of the two last-named mines operating now, however. The drifts are from 20 to 45 feet high and are very wide in places, especially near the junction with the drift from the White Rose mine. The drifts are very irregular in form, and the mine presents generally the appearance of having been in the hands of many different companies or individuals, who have mined in as many different ways and manners and with no regard to the safety of the mine. Six men were employed in the ground—two shovelers besides the company members. Stope was being taken up through the northwest drift, and there is a fair showing of ore in this stope, but I do not see how any of this ore can be removed safely. The product of the mine was largely silicate. I might also add in this report that Mr. John Campbell, the only survivor of Knowles, Campbell and Company, stated to me that as soon as the last body was recovered he was done with the mine for good and all, and that he had not the slightest wish to resume operations.

There were several causes contributing to the fall of the roof. In the first place, the ground had been improperly mined and the pillars that were left were poorly formed, or else had been "gouged." The bottom of the main pillar is composed of a clay formation which, being soft, has allowed the pillar to settle away from the roof and rendering it almost worthless as a support to the roof. Then a large hole had been shot in the roof at some time—probably by some prospectors who were looking for ore, which greatly weakened it. The roof thus weakened would not stand the jarring of the stope shots and gave way, breaking from the hole which had been shot in it. I am informed that a heavy boulder pop (shot) had been fired just before the men went out at noon.

October 13th—Halloween Mining Company, Joplin; Lee Walker, age 21; occupation, tub hooker. Found dead by fellow workmen at bottom of shaft; cause unknown.

Remarks by Inspector Brown—I made an investigation on the date of accident, and have since visited the mine twice in an effort to establish the cause of death. I learned that about ten minutes before the body was found by fellow workmen that the hoisterman had received a signal to hoist a man, but when the tub reached the surface it was empty. The hoisterman testified that he let the empty tub back and hoisted two loaded tubs before the body of Walker was brought to the surface. The men who were in the derrick at the time that the empty tub was hoisted did not recollect whether the hoisterman hoisted two more loaded tubs or not. The men who were working in a drift about sixty feet from the shaft testified that they heard something fall and thought it was a slab, but on returning to the shaft a little later found the body of Walker. In my opinion, Walker started to the surface and either fell from the tub or was brushed from it by coming in contact with the wall of the shaft.

October 14th—American Zinc, Lead and Smelting Company, Davey Mine No. 1, Carterville, Jasper county; Leonard Hibbs, age 16; occupation, tub runner; Thomas Endy, age 24; occupation, shoveler. Death caused by falling of slab, crushing the men.

Remarks by Inspector Wallace—I at once went to the mine and investigated the accident and the causes leading thereto. A large elliptical slab of roof, about twenty feet wide, thirty feet long and from six inches to one foot thick, had fallen without warning from the roof in drift No. 4, crushing the men beneath it. Neither one of the men killed were working in the drift in which the fall occurred, but had come into it to talk with the men working there. The machine men in this drift were in the heading and so escaped the fall, and the shoveler had just left the drift with a tub of dirt. A large slab of the cap rock, extending through five of the southwest drifts in this mine, had been taken down because same was known to be loose. I gave the order to take it down on date of first inspection, June 12, 1909, it showing signs of parting from layer above. The slab that fell was from the layer above the original cap rock, which was taken down. When the cap rock was taken down through the five drifts, it was thought that a good roof had been secured. In this they were mistaken, for while the new roof looked all right, and perhaps sounded all right, it was composed of stratum of very rotten flint having very little strength, as shown by the slab which fell.

One of the saddest features of this accident was the extreme youth of Leonard Hibbs, who was barely sixteen years of age (some said only fifteen last March). I found that the law had not been violated, as the lad could read and write, and so came under the fourteen-year limit, but in my opinion, the law should not permit the working of boys under eighteen years of age in any mine.

In justice to Mr. Polhemus, the superintendent, I will say that the boy came to him asking for work, stating that he had no one to support him, his father having turned him away. Having no work for him on top, Mr. Polhemus gave him a job running tubs in the ground from the shaft to the lay by. He was large for his age and could easily do this work, and if he had not left his track he would not have been hurt by the fall. This ground has been cut too wide (by the company formerly operating the mine) and the roof in several of the drifts being of the same character as that in which the fall occurred, I gave instructions that all of the drifts in the south, southeast and southwest portions of the mine be timbered, square sets being used wherever possible. That in the southwest drifts, where roof had been taken down, the roof be dropped until under the original cap rock, the drifts being cut very narrow until well under said cap rock, and that in future cutting of the ground pillars be left sufficiently close to keep this cap rock from breaking again. That drill holes be drilled in the roof from time to time to ascertain the formation above and records kept of same. This mine was started up about June 1, 1909, after having been idle for some years. The mine was first opened up by the Missouri Blanket Vein Company and afterwards operated for awhile by the American Company.

October 27th—Oronogo Circle Mining Company, Mine No. 5, Oronogo, Jasper county; Joseph Morgan, age 23; occupation, mule driver. Death caused from fall from cage to bottom of shaft.

Remarks by Inspector Wallace—As is customary in this district, the men are hoisted and lowered at this mine in the ordinary mining tub, but the use of mules in the ground having been lately adopted, two men were accustomed to ride on the mule cage to guide it in the shaft. This mule cage is just a rectangular box, built of heavy oak lumber well ironed, about three feet wide, six feet long and five feet high, the ends hinged and the top open. The shaft being five feet by nine feet inside the cribbing, and even larger below the cribbing where sunk through hard rock, it was necessary, or thought so, for someone to ride the cage to keep it from bumping. On the morning of the accident, a new cable had been put on the hoist. Morgan and B. Surface started down on the cage with the mule and had reached a point in the shaft just below the cribbing and about 100 feet from the bottom when one end of the cage bumped against the side of the shaft, knocking Morgan off and causing him to fall to the bottom. The twisting of the cage on the new cable is supposed to have caused the bump. Morgan had been warned to be careful as the cable was new and was liable to twist. I recommended that the shaft be laced from the cribbing on down to the bottom so that the mule cage could be hoisted and lowered without guidance, and directed that no men be allowed or employed to ride on the cage with the mules.

October 27th—A. McInturff & Company, Osceola No. 2 Mine, Webb City, Jasper county; C. Goodwin, age 30; occupation, shoveler. Killed by being struck on head by falling drill column.

Remarks by Inspector Wallace—Goodwin had come to the shaft with a tub of dirt and at the time of the accident was waiting for an empty tub. Just at this time an air drill and the fittings and column for same were being hoisted out of the shaft. The drill had been hoisted and landed at the top of the shaft and the empty hook sent back for the column. For attaching the column to the hook on the end of the hoisting cable a piece of one inch manilla rope was used. The column had been hoisted about 100 feet in the shaft and was riding free when the manilla rope broke and allowed the column to fall back down the shaft. In falling, the column struck the pump suction at the bottom of the shaft, rebounded against the side of one of the shaft pillars and from thence flew and struck Goodwin, who was some distance from the bottom of the shaft. Testimony at the inquest developed that the rope had been considered to be in good condition, as it had been in use only a short time. It had probably become weakened by the action of the mine water on same.

NOVEMBER 1st—Smith and McKibban, Cumberland mine, Joplin; Clyde Douglas, age 21; occupation, machine helper. Died from injuries received by being struck by falling boulder from the top of stope.

Remarks by Inspector Brown—Douglas was a helper on a drill underground. The underground mining in the Cumberland mine is done under contract by T. H. Smith and Norman McKibban, both of Joplin, in whose employ Douglas was at the time of the accident. I made an investigation of the accident and found that Douglas at the time of the accident was employed with others in setting up a drill about half way up the stope, which is about sixty feet high from the platform, when a loose boulder rolled from the top of the stope and struck Douglas. The boulder severed his right leg between the knee and the ankle, from which injuries he died about fourteen hours later.

NOVEMBER 3d—Electrical Zinc and Lead Mining Company, Webb City, Jasper county; Floyd Newton, age 27; occupation, powder man; J. C. Harrison, age 26; occupation, helper to powder man. Instantly killed by premature explosion of dynamite.

Remarks by Inspector Wallace—The men being by themselves at the time of the accident, the exact cause of the explosion will probably never be known, but from my own investigations and the testimony given at the inquest, I am of the opinion that it occurred as follows: The powder man, Newton, and his helper, Harrison, had come into this drift to load a double round of holes, six holes to the round, averaging about 11 feet in depth, bringing with them about two boxes of forty per cent. powder, a roll of fuses with caps on and several prepared shots (sticks of powder with fuse and cap imbedded). When last seen, about three or four minutes before the explosion, they were engaged in loading the first hole (front stope hole) of the first round, Harrison sitting just to the left of the hole with a box of powder in his lap, placing the sticks of powder in the mouth of the hole, and Newton standing in front of the hole running the sticks down with a wooden tamping bar. The man who saw them at this time asked "How are they loading up?" and Newton replied, "All right, so far." Soon after came the explosion. In my opinion, the powder in the hole was exploded first, and it in turn exploded the loose powder in the box on Harrison's lap and the other box nearby. I base this opinion on the fact that Newton was blown directly away from the hole, on a line with it; his right arm was blown off; his body was much less mutilated than that of Harrison. From the length of time they were known to have been at work on the hole it must have been at least half loaded, and examination of the hole showed that powder in same had been exploded, the hole collared and the face cracked and shaken as far back as the back breast hole.

While Newton was blown directly away from the front of the hole, Harrison was blown to the left, his body being blown to pieces and scattered over the drift. The explosion of the powder in the hole could easily set off the powder outside, but I do not think that the explosion of the powder outside of the hole would explode that in the hole. I examined all of the tamping bars I could find in the mine and on none of them could I find any metal bands or nails. Pieces of the tamping bar used by Newton, and found by me after the explosion, proved it to have been of wood. Smith, the regular powder man at this mine, and in whose place Newton was working, stated that he never used nails in the ends of his tamping bars. Examination of the hole they were loading and other holes in the round showed same to be smooth. While Newton was a new man at this position in this mine, inquiry as to his work at other mines tended to show that he was a careful and competent man and familiar with the handling of explosives, having held positions as powder man before.

DECEMBER 13th—Pilot Lead and Zinc Company on Gregg land, Newton county; postoffice, Joplin; Charles Brough, age 21; occupation, shoveler. Instantly killed by rock falling from tub.

Remarks by Inspector Brown—I visited the scene of the accident two hours after same occurred, also attended the coroner's inquest. I found that just before the accident Brough, in company with William Duffield, the ground foreman, was engaged in placing a car on the track in the shaft. They had sent a loaded tub to the surface, but for some reason the tub struck some object in the shaft, probably the curbing at the roof of the drift, causing the contents of the tub to fall back on the men below. A boulder struck Brough on the head, crushing his skull and causing instant death. Duffield was slightly injured.

DECEMBER 14th—David M. Sayers, Cecile Murphy Mine, Joplin; James Otto Chubb, age 35; occupation, shoveler. Killed by fall into shaft.

Remarks by Inspector Brown—I visited the mine on the day of the accident and attended the coroner's inquest. I learned from investigation and from evidence given at the inquest that Chubb had just ascended the shaft in company with the ground foreman, both of the men riding on the top rim of the tub. Chubb lost his balance in trying to get off the tub at the top of the shaft and fell back to the bottom, striking his head against the pump suction. He fell into fourteen feet of water at the bottom of the shaft and his body was not recovered until an hour and a half afterwards. I believe that if there had been a hand rail around the top of the shaft, and if the men had ridden in the bottom of the tub instead of on the top of it, the accident would not have happened.

DECEMBER 30th—I. C. Hess and Company, Alabama No. 1 Mine, Porto Rico, Jasper county; Charles Davis, age 17; occupation, shoveler; James Doty, age 21; occupation, shoveler. Fatality due to falling slab from roof. Davis was instantly killed and Doty received injuries from which he died the following day.

Remarks by Inspector Wallace—Davis and Doty were at work in a drift in the mine on date of accident when a slab of roof, almost circular in form, about twenty feet in diameter, and averaging four inches thick, fell without warning, crushing them beneath it. The drift in which the fall occurred was not wide, the pillars averaging only about thirty feet apart, and I think that the fall was caused by a thin seam of selvage which parted the stratum (of which the slab was a part) from the next one above, the two being cemented together in only a few places. Stope was being taken up in this mine, and the jarring effect of the stope shots probably helped to loosen the slab. The testimony at the inquest tended to show that the roof in this drift was considered safe, and that none of the men working in same had noticed anything indicating that slab was loose. However, a little more care in sounding and examining the roof would probably have prevented the accident.

LEAD AND ZINC MINE ACCIDENTS, 1909.

WESTERN DISTRICT, NON-FATAL.

APRIL 27th—Grace Zinc Company, Grace Mine, near Chitwood, Jasper county; Frank Short, machine man, and Patrick Finn, machine helper, were injured while preparing to "squib" a drill hole. They had placed several sticks of dynamite in position in the hole and were in the act of running down the shot when the explosion took place.

Remarks by Inspector Wallace—The drill hole was wet, and, therefore, could not have been hot. I am of the opinion that the accident was due to either improper mixture of powder or that men in preparing shot failed to completely bury the cap in the powder. If this was the case, the cap could easily have been exploded by friction against the rough sides of the hole in running down the shot.

JUNE 16th—American Davey Mine No. 1, Carterville; J. A. Brand, age 48; occupation, machine man. Serious injuries received by remaining in close proximity to shots when same were fired. Elgin, the machine helper, was killed at the same time. (See report of accident under fatal accidents.)

JUNE 29th—Motor Mine, Joplin; Louis Malone, age 35; occupation, machine drill man. Seriously injured by the explosion of a squib shot.

Remarks by Inspector Wallace—Malone had drilled a hole about twelve feet deep and was squibbing same preparatory to loading. He had prepared a shot or primer, using a fuse seven feet long. After lighting the fuse and running the shot down, the men all went to a place of safety to await the explosion. The shot did not go, and, after waiting eighteen minutes, according to the ground foreman's time, Malone prepared another shot, and was in the act of running it down the hole when the explosion occurred, breaking his left arm, blowing off the forefinger of the right hand and blowing two holes in his breast. Whether Malone exploded the second shot in running it down the hole or whether the first shot had hung fire and exploded just as he was running down the second shot will never be known, but it is an evident fact that sufficient time was not allowed to elapse before approaching the hole a second time.

JULY 7th—We Do Mining Company, Joplin; William Rodgers, age 32; occupation, miner. Injuries received from an explosion of powder.

Remarks by Inspector Brown—Investigating the cause of the accident, I learned that seven shots had been fired in the drift on July 6th. The dirt broken by these shots having been hoisted, the heading was made ready for a new set of timbers. Preparatory to putting in these timbers, Rodgers and Armstrong (the latter the ground boss) were engaged in spudding a shallow hole which, when fired, would make room for the butt of a post. They had just started the spud—Rodgers striking and Armstrong holding—

when the explosion occurred, probably from the point of the spud striking a piece of powder that had been left lying in the bottom of the drift, and had become covered by loose dirt or else by striking a piece of powder that had not exploded when the shots were fired on the day before.

JULY 9th—Cowhead Mine, on the H. C. Murphy land, Joplin; M. C. Bradley, age 29; occupation, steam drill man. Bradley is one of the eight shareholders operating this mine, and was injured by a premature explosion of a squib shot while acting as drill man and powder man.

Remarks by Inspector Brown—I visited the mine and made an investigation into the cause of the accident. I learned that Bradley was engaged in squibbing the center hole of a three-hole round with one stick of powder. He had shoved the stick of powder to the bottom of the hole, but did not think it was quite down and kept on tamping it. He was warned by his helper, Arthur Duncan, that the powder was at the bottom of the hole, but paid no attention to the warning and gave another shove with the tamping bar, when the powder exploded, tearing off three fingers of his right hand and breaking his arm between the elbow and the wrist. He had previously squibbed the hole twice, each time with one-half stick powder. The last of these two squibs had been fired only a short time before the accident, and as Bradley had neglected to blow out the hole following the firing, the hole was undoubtedly hot when he placed the third shot in it. I was informed by other men who worked in the mine that Bradley was using a piece of gas pipe for a tamping bar. It seems that Bradley violated every principle for the safe handling of powder, and his carelessness was undoubtedly the cause of the accident.

JULY 25th—American Davey No. 5, Carterville; Samuel Lynch, age 28; occupation, machine helper. Lynch was seriously injured by an explosion in shaft No. 5 while blowing out a failed hole without first examining the hole for powder. For particulars of accident, see Fatal Accidents—Charles Potter.

AUGUST 14th—The King Edward Mining Company, Joplin; E. O. Bray, age 25; occupation, shoveler. Was injured, but not seriously, by being struck on the head by a piece of board which fell down the shaft.

Remarks by Inspector Wallace—A tub had bumped on the edge of the well hole in derrick, splintering a board, a piece of which was hanging loose. An effort was made to remove it, which failed, and the board fell down the shaft striking Bray on the head, probably a glancing blow, as otherwise it would have certainly killed him. There is no excuse for accidents of this character, as they are caused entirely by carelessness. I recommended that lacing boards be placed flush with the edge of the well hole and belled out at the bottom, thus making a guide for the ascending tubs. Bray fully recovered from his injuries a month later.

AUGUST 26th—Carmean-Squires & Company, Mine No. 1, Webb City; Marion Peek, age 35; occupation, hoisterman. Peek was seriously injured while performing his duties as hoisterman by the breaking of the intermediate pinion on the electric hoist.

Remarks by Inspector Wallace—The pinion broke when the hoist was running at full speed pulling a full tub of dirt. A piece of the broken pinion flew, striking Peek on the forehead, just over the left eye, causing a fracture of the skull. I examined the broken pieces of the pinion, and found no evidence of a flaw in the casting. The keyway showed some signs of wear, as if the key had been loose in same, but do not think that this had any bearing on the accident. I am inclined to believe that the key was driven too tight in the pinion, thus causing the break.

OCTOBER 9th—Starkweather, McGill and Schweikert, Little Francis Mine, Neck City, Jasper county; Henry McGill, age 45; occupation, superintendent and part owner. This can hardly be termed a mine accident. McGill was on the waste boulder pile without advising anyone, and when cull hand dumped car of boulders he was struck by one, causing a fracture of skull.

DECEMBER 13th—The Symmes Mine, Joplin; Asa Grimstead, age 22; occupation, shoveler; received serious injury while at work in the mine by being struck by a boulder which fell from the roof.

DECEMBER 16th—Home Run Mining Company, Webb City; Ollie Reed, age 27; occupation, machine helper. Injuries received from fall of small boulder which struck his hand and wrist, breaking his wrist. Piece fell where the column bar had been jacked against the roof, probably loosened by jar of machine. He had taken down bar and was taking up foot block when piece fell.

DECEMBER 27th—O. F. and L. Mining Company, on Trinity Lead and Zinc Company land near Porto Rico, Jasper county; Frank Kirkendall, age 19; occupation, shoveler. Seriously injured by the air line breaking and falling down shaft.

Remarks by Inspector Wallace—Kirkendall had brought a full tub to the shaft. The tub had been hooked on the cable and sent up the shaft. When about seventy feet from the top the tub bumped against the air line causing it to break and fall. The air line was four and a half inches down to about seventy feet from the top, where it was reduced to three inches, a cast iron bushing being used to make the reduction. The three-inch line extended on down the shaft to the top of the drift (which is about eight feet high), and from thence out along the roof of the drift, and then down to the bottom of the drift. The line was not held by clamps, either at the top or bottom. Kirkendall was standing several feet from the bottom of the shaft and was caught, and his back broken, under the part of the three-inch line which extended out along the roof of the drift. This part of the line also had the weight of the three-inch line in the shaft which gave it great crushing force.

LEAD AND ZINC--WESTERN DISTRICT.

MISCELLANEOUS.

Table 32—Showing Improvements Made by Operators in Western Lead and Zinc District During 1909.

JASPER COUNTY.

Owner of land.	Operator.	Improvements.
Acme Lead & Zinc Co	Church-Mitchell M. Co	Two tables added to mill and addition for same.
Amsden, Electa F	Texhoma M. Co	Old mill overhauled and repaired, cost $6,000.00.
American Z., L. & S. Co	Davey Mines	Vogey mill completed, 3,000 Ingersoll-Rand compressor installed, tailing mill put in operation, complete oil system installed.
American Z., L. & S. Co	Durston M. Co	Opened mine completely, bought some mining land which is not yet being operated.
Ashcraft-Reynolds M. Co	Providence M. & M. Co	Tank house and tank for fuel oil, new boulder tramway, coal house and gasoline house.
Ashcraft-Reynolds M. Co	South Portland M. Co	Sunk 220 ft. shaft, built new derrick and hopper, constructed 800 ft. tramway and rebuilt concentrating plant.
Avondale L. & M. Co	Jubilee M. Co	150-ton mill built.
Avondale L. & M. Co	Carl Junction M. Co	One shaft sunk deeper, and 150 feet of elevated tramway built.
Avondale L. & M. Co	Edward R. Hall	One shaft 95 feet deep sunk.
Aylor, J. W	Dominion L. & Z. Co	One new derrick and tramway built.
Aylor, J. W	Ruby M. Co	Built tramway, one boiler and hopper installed.
Beacon Land	E. L. Burtiss	Two derricks and tramway.
Boston-Duenweg M. Co	Wilson Mines Co	Sinking and equipment of new shaft.
Bowen Estate	Isabel M. Co	Built a new mill consisting of 1 five cell jig, 1 crusher, 1 pair of rolls, 3 elevators, 1 boiler, 1 gas engine, 1 hoist and hopper.
Boyd, J. P. Estate	Optimo L. & Z. Co	New hopper, new ruffer jig, new trams.
Bradford-Kansas City Z. Co	Dinger M. Co	New 140 foot shaft sunk; derrick, hopper and tramway to mill built; air drift, 70 feet deep cut; 150 H. P. gas engine installed.
Brooks, Kennedy Est	DeGraff Bros	Mill was completed at a cost of some $15,000.
Byrd, Charles A	Thornton M. Co	Built a mill and sunk shaft deeper.
Center Creek M. Co	Southtown M. & M. Co	Installed small air compressor and added sludge room to mill.
Center Creek M. Co	Viaduct M. Co	New hoister and general repairing of boilers and engine rooms.
Center Creek M. Co	W. D. Burns	Hopper, compressor, engine, heavy rolls, boiler and general repairing of building.
Chinn, E. J. & C. R	Endeavor M. & Inv. Co	New mill and one shaft.
Chinn, E. J. & C. R	Eleventh Hour M. Co	One new gas engine and building.
Claycomb, S. H	General Z. & L. Co	Built mill and concentrating plant.
Claycomb, S. H	Federated M. & M. Co	New shaft begun.
Connor Estate	Ten O'Clock M. Co	One shaft sunk.
Connor Estate	Long M. & M. Co	Gas engine, new table and sand jig installed.
Continental Zinc Co	Jack Harvard Z. M. Co	Present derrick and tramway built.
Continental Zinc Co	H. R. Drury	Built derrick.
Cosgrove, Henrietta C	Carnation M. Co	Mill constructed.
Cunningham, Thos. W	D. S. Y. Mining Co	Erected mill and sunk one shaft.
Davey, Thos. W	Vesuvius M. Co	Sludge table, elevator, classifier and screen.
Excelsior Z. & L. Co	Gouveneer L. & Z. Co	A complete concentrating plant built, and two shafts put in condition to use for hoisting.
Fulkerson, Harper & Graves	Victoria M. Co	Put in a steam-actuated hand jig to rough the dirt as it comes from the ground.
Geneva Mining & Leasing Co	White Swan M. Co	One 100-ton milling plant installed.
Geneva Mining & Leasing Co	Pole Star M. Co	One derrick and a blacksmith shop built.
Granby M. & S. Co	Grace Zinc Co	Built a "booster" elevator and opened No. 7 shaft at a cost of about $2,600.
Gregg, H. H	Emperor L. & Z. Co	Sunk shaft from 130 foot level to 200 feet.
Guinn, Jno. C	Moark-Nemo Cons. M. Co	Installed steam compressor, completed Nemo mill.
Guinn, Jno. C	Mercantile Metal M. Co	New 400-ton mill constructed.
Guinn, Jno. C	Ground Floor M. Co	Installed electric pump.

JASPER COUNTY—Continued.

Owner of land.	Operator.	Improvements.
Guinn, Jno. C	Home Run M. Co	Built office.
Guinn, Jno. C	King Edward M. Co	Built new hoister, derrick and tramway; raised tailing elevator 20 feet and built new fluming for same.
Guinn, Jno. C	L. & H. 1906 Milling Co	Full sludge equipment at $2,850.
Guinn, Jno. C	Schoenherr & Walton	Electric light plant, tailing dummy, city water connection with high pressure fire protection; portable watchman's clock and 6 stations.
Henderson Estate	Opportunity M. Co	Mill built on ground.
Jackson, Jno. Inv. Co	A. B. C. Mining Co	Sinking shaft and building mill.
Jackson, Jno. Inv. Co	Joplin-Kentucky M. Co	Put in new Cooley jig, cost of installing same, $1,000.
Jasper County Royalty Co	Lincoln M. & M. Co	New 300 ton mill completed.
Johnson, W. E	Grand Central M. & M. Co	Installed a new 150 horse power boiler.
Kelley, Albert	South Portland M. Co	Boiler house erected.
Kelley, Albert	White Dog M. Co	Gas engine and hoister installed, also built dirt elevator.
Kelley, Albert	Osceola L. & Z. Co	Installed one 150 and one 110 horse power gas engine, and three 5-cell steam jigs.
Kelley, Albert	Bohemian Girl M. Co	Building of shed at $1,200.
Kelley, Albert	Carbondale M. & M. Co	Removed cages and put in skips for hoisting.
Lambert, Clarence	Waneta M. Co	Wilfley table installed.
Leonard Realty Co	Cumberland M. Co	Connected mill by tramway to two shafts, installed gas engine to drive mill, installed pump station at Turkey Creek.
Luke & Ash & Co	Gibson M. Co	New sludge table added, also coal house, powder house, office and settling tank.
Magnet Mining Co	Red Ant M. Co	New air compressor installed.
Magnet Mining Co	Hill Billy M. Co	New shaft and improvements on mill to the amount of $1,800.
Mexico-Joplin Land Co	Katherine Lease Co	One 110 horse power Bessemer gas engine installed.
Migonette Mining Co	Migonette M. Co	Shaft sunk from 160-foot level to 226 feet, new 250-ton concentrating plant erected.
Newell-Morse Royalty Co	Winslow M. Co	Tram 400 feet erected between shafts 2 and 3, hoister house and hopper at No. 3 shaft.
Norton, E. H	Helen M. Co	Mill repairs at $1,000.
Ping, S. R	Grace Ping M. Co	Concentrating plant, derrick and tramway built; shaft completed.
Reliance M. Co	Federated M. & M. Co	Built an incline tramway 750 feet long.
Rex Mining & Smelting Co	Sycamore M. Co	Built new shaft house, boiler house, derrick and tramway.
Rex Mining & Smelting Co	Greencastle Z. & L. M. Co	Five new shafts, derricks and hand-jigs, etc., by sub-lessees.
Rex Mining & Smelting Co	Frank Nicholson	Cut an air drift to improve ventilation in mine.
Richardson, Jesse	Little Frances M. Co	Shaft completed and new concentrating plant erected.
Richardson, Jesse	1909 Mining Co	One shaft sunk 172 feet, one concentrating plant erected.
Roaring Springs Land Co	Wautauga M. Co	Mill erected.
Rochester L. & L. Co	Red Dog M. Co	North end of mine developed, tramway built to north and west shafts, electric machinery installed.
Rochester L. & L. Co	Bull Dog M. Co	New shaft sunk, lower stope opened up, gas engine installed, electric mine pump installed.
Rochester L. & L. Co	C. C. & H. M. & M. Co	New jig at $700.
Royalty L. & M. Co	Barr, Gloninger & Walsh	Built 300-ton hopper, put in big hoister, an incline tramway and Ford table, also revolving screens.
Schifferdecker, Charles	West 7th Street M. Co	New sludge table, mud-settling machine for boiler, and city water installed.
Schifferdecker, Charles	Kitty Mack M. Co	Erected mill and added sludging department.
Smith Heirs	Moler-Smith L. & Z. Co	Three gas engines and six pumps installed, also two large belt driver hoisters.
Smith Heirs	Lehigh Zinc Co	New hand jig plant and boiler house erected.
Smith, Gilbert L	Sunflower L. & Z. Co	Built a 300 ton concentrating plant.

JASPER COUNTY—Continued.

Owner of land.	Operator.	Improvements.
Underwriters Land Co	C. C. & H. M. & M. Co	Electric shovel and conveyor, $3,500.
Walker, Jos. I	Sayers M. Co	New shaft opened.
Ware, Bowman & Scott	Genesee M. Co	Built office, blacksmith shop and barn, also installed light plant.

NEWTON COUNTY.

Owner of land.	Operator.	Improvements.
Allen, J. W	Sunrise M. Co	New mill constructed, air compressor and 3 new air drills installed.
Chase, Geo. N	Silver Plume M. Co	Installed boiler, engine, compressor and fan, built steam heated dressing house.
Granby M. & S. Co	Mears M. Co	One new tailing mill installed.
Mattes Brothers	Duquesne M. Co	Mill erected.
St. Paul M. Co	Skaggs & Pearson	Two hoisters installed and one shaft sunk.

LAWRENCE COUNTY.

Owner of land.	Operator.	Improvements.
Boston-Aurora Land Co	Stone & Qualls	New smoke stack and boiler reflued.
Gundling, Harry	Silver Star M. Co	Mine put in shape and generally developed for large production.
Jones, C. E	Mo. Hydraulic M. Co	Smoke stack, $85.00. roofing engine house, $22.00.
Stotts Heirs	Keystone M. Co	Two jigs, 1 crusher, 2 sets rolls, 1 tailing elevator.
Stewart, P. W	Southwest Mo. M. Co	New derrick, incline and hopper.
Tooker, C. W	No. 4 Drill Co	Mill erected.

GREENE COUNTY.

Owner of land.	Operator.	Improvements.
Reitz, P. J	Badger L. & Z. Co	Installed new boiler and pump.

STATISTICAL.

EASTERN DISTRICT.

Lead, Zinc, Iron, Baryta, Copper, Cobalt, Nickel, Fire Clay.

LEAD AND ZINC—EASTERN DISTRICT.

Table 1—Showing Capitalization, Amount Invested, Incorporation, Acreage Controlled, and Location of Land.

Name of operating company.	Capitalization.	Amount invested in land and plant.	Incorporated under laws of	Land controlled	Location of land.*			No. shafts	Average depth of shaft	Outlets	New shafts opened	Old shafts abandoned
					Sections.	Township	Range					
FRANKLIN COUNTY.												
Wrisburg, C. G. and E. F		$25,000			30	41	1	3	75	2	1	1
JEFFERSON COUNTY.												
Valle Mining Co	$200,000	$200,000	Missouri									
MADISON COUNTY.												
Eastern Lead Co	$600,000	$200,000	New York	413								
North American Lead Co	2,000,000	500,000	Ohio	850	15 16 21		7	2	235			1
Mine La Motte L. and S. Co	3,000,000	2,437,784	New Jersey	10,848	12 16	33 &34	6 & 7	2	125	10	1	1
Phoenix Land Co	600,000	600,000	Missouri	1,580				2	124	2		
ST. FRANCOIS COUNTY.												
Des Loge Cons. Lead Co	$1,000,000	$1,000,000	Missouri	4,303		36	4	6	300	6		1
Doe Run Lead Co	10,000,000	13,367,870	Missouri	6,548				10	400	16	1	
Federal Lead Co	2,000,000	4,110,518	Delaware	14,000				10	415	19	1	
St. Joe Lead Co	20,000,000	7,500,000	New York	19,000				8	353	7	1	
St. Louis Smelting and Refining Co	2,000,000	1,200,000	Missouri	1,295				4	366	5		
WASHINGTON COUNTY.												
Z. T. Higginbotham & Sons												
Point Milling and Manufacturing Co	$150,000	$150,000	Missouri	3,100		37	3					
Renault Lead Co	300,000	300,000	Missouri	10,000								
C. C. Rose		3,000		101		40	2					
Washington Land and Mining Co	50,000	50,000	Missouri	6,000								

Table 2—Showing Mine Equipment.

Name of operator or company.	Mine equipment.															
	No. of concentrating plants	Daily capacity in tons.	No. of engines	No. of pumps	Capacity per min. in gal.	No. of boilers	No. of drills	Kind of power.	No. of hoisters	Kind of power.	No. of crushers	Kind used.	No. of air compressors.	Kind used.	No. of tables	Kind used.
FRANKLIN COUNTY.																
Wrisburg, C. G. & E. F	...	...	...	1	60	1	1	Air	1	Steam	...	...	1	Bury	...	...
JEFFERSON COUNTY.																
Valle Mining Co	...	...	1	1	...	1	...	...	...	...	...	...	...	...	...	...
MADISON COUNTY.																
Eastern Lead Co	1	300	...	4	500	3	10	Air	3	Air and steam	1	Shallenback	2	1 Rand, 1 Sullivan	6	Wilfley No. 5.
North Amer. Lead Co.	1	400	3	2	800	7	12	Air	2	S. and E	3	Austin	2	1 Laidlaw, 1 Sullivan	14	Wilfley-Gates.
Mine LaMotte L. & S. Co	1	500	7	4	...	11	17	Air	3	Steam	3	Blake	3	Rand & Blaisdale	16	Caid.
Phoenix Land Co	2	750	...	5	700	8	16	Air	2	Air and steam	5	...	1	Rand	12	Wilfley (et al)
ST. FRANCOIS COUNTY.																
DesLoge Cons. L. Co	1	1,000	5	6	4,500	9	30	Air and steam	4	...	9	Blake	5	1 Allis, 4 Norfolk	29	Klein & Wilfley
Doe Run Lead Co	3	3,300	13	25	15,000	30	80	Air	10	E. and S	8	Gates-McCully	10	...	117	Shaker-Wilfley.
Federal Lead Co	2	4,200	5	12	10,000	37	150	Air	8	S., E. and A	21	Gates-Blake	9	...	112	Wilfley.
St. Joe Lead Co	2	3,000	12	19	...	36	95	Air	12	S., E., and A	6	Gates	18	...	56	Wilfley.
St. Louis Smelting & Refining Co	1	1,500	3	12	...	8	40	Air	4	Electric	6	Gyratory	2	...	96	...

Table 3—Showing Number of Employes and Wages Paid, Production During 1909.

Name of operating company.	Employes and wages.												Number of days mine was worked during 1909....
	Ave. No. miners employed..........	Ave. daily wage....	Av. No. men to look after roof........	Ave. daily wage....	Ave. No. top and mill men..........	Ave. daily wage....	Ave. No. of boys....	Ave. daily wage....	Ave. No. of prospectors..........	Ave. daily wage....	Ave. No. of other help..........	Ave. daily wage....	
FRANKLIN COUNTY.													
Wrisburg, C. G. and E. F.	3	$1.75	....	....	2	$1.75	....	....	....	....	1	$2.00	250
MADISON COUNTY.													
Eastern Lead Co	60	$1.80	2	$1.80	35	$1.75	....	....	....	....	3	$3.00	182
North American Lead Co	75	1.75	2	1.90	25	1.50	....	....	2	2.50	2	1.75	270
Mine La Motte Lead and Smelting Co	64	1.75	....	....	33	1.60	....	....	....	....	35	1.65	300
Phoenix Land Co	36	1.90	2	1.90	24	1.70	....	....	....	....	15	2.00	182
Totals	235	....	6	....	117	....	....	....	2	....	55	....	....
ST. FRANCOIS COUNTY.													
Des Loge Cons. Lead Co	299	1.86	10	1.90	103	2.00	....	....	12	2.25	42	2.00	307
Doe Run Lead Co	675	1.90	40	1.90	575	1.90	18	1.50	16	2.05	200	1.90	300
Federal Lead Co	550	1.97	37	1.90	354	1.95	5	.73	42	2.57	67	1.80	308
St. Joseph Lead Co	949	1.88	66	1.91	519	1.93	30	1.61	46	1.87	....	....	....
St. Louis Smelting & Refining Co	390	1.85	12	1.95	120	1.75	3	1.00	30	1.81	260	1.75	315
Totals	2,863	....	165	....	1671	....	56	....	146	....	569	....	....
WASHINGTON COUNTY.													
Z. F. Higginbotham & Son	....	....	....	....	....	....	....	....	....	....	....	....	....
Point Milling & Manufacturing Co	....	....	....	....	....	....	....	....	....	....	....	....	....
Renault Lead Co	....	....	....	....	....	....	....	....	....	....	....	....	....
Rose, C. C.	....	....	....	....	....	....	....	....	....	....	....	....	....
Washington L. & M. Co	....	....	....	....	....	....	....	....	....	....	....	....	....
Totals	....	....	....	....	....	....	....	....	....	....	....	....	....

Table 4—Showing Production and Value of All Ores Mined During 1909.

Name of operating company.	Baryta.		Tons of lead mined	Value of lead mined	Tons of zinc mined	Value of zinc mined	Tons of copper...	Value of copper ingots...........	Tons of cobalt	Value of cobalt	Tons of nickel mined..........	Value of nickel mined..........	Total value of all ores mined......
	Tonnage.....	Value.......											
FRANKLIN COUNTY.													
Wrisburg, C. G. and E. F.			20	$800									$800
JEFFERSON COUNTY.													
Valle Mining Co.			104	$8,594	1,284	$21,186							$29,780
MADISON COUNTY.													
Eastern Lead Co.			1,305	$48,275									$48,275
North American Lead Co.			1,352	50,000			550	$145,000	29	$75,000	42	$35,000	305,000
Mine La Motte L. & S. Co.			5,362	268,064									268,064
Phoenix Land Co.			2,550	88,000									88,000
Totals			10,569	$454,339			550	$145,000	29	$75,000	42	$35,000	$709,339
ST. FRANCOIS COUNTY.													
Des Loge Cons. Lead Co.			16,588	$746,460									$746,460
Doe Run Lead Co.			32,933	1,385,110									1,385,110
Federal Lead Co.			65,244	2,994,000									2,994,000
St. Joseph Lead Co.			65,708	2,389,600									2,389,600
St. Louis Smelting & Refining Co.			22,000	927,792									927,792
Totals			202,473	$8,442,962									$8,442,962
WASHINGTON COUNTY.													
Z. F. Higginbotham & Son.	1,300	$5,330	100	$2,528									$7,858
Point Milling & Manufacturing Co.	2,057	6,171											6,171
Renault Lead Co.			18	1,041									1,041
Rose, C. C.	500	2,250	5	240									2,490
Washington L. & M. Co.	100	500	100	2,500									3,000
Totals	3,957	$14,251	223	$6,309									$20,560

IRON.

Table 5—Showing Employes and Wages, Tonnage and Value.

Name of operating company.	Employes and Wages.												Number of days mine was worked during 1909	Iron.	
	Ave. No. miners employed	Ave. daily wage	Ave. No. of men to took after roof	Ave. daily wage	Ave. No. of top and mill men	Ave. daily wage	Ave. No. boys	Ave. daily wage	Ave. No. of prospectors	Ave. daily wage	Ave. No. of other help	Ave. daily wage		Tonnage.	Value.
Missouri Copper Mt. Mining Co.	4	$1.50	1	$1.50	1	$1.50					4	$1.50	15	225	$562
W. H. Smallinger	2	1.95											200	15,000	45,000
Puxico Iron Company											40	1.50	20	756	2,268
S. Landau	15	1.50					2	1.25	3	1.50			250	3,500	6,560
Northwestern Con. L. L. & I. Co														400	2,000
Ruby Mountain Iron & Furnace Co	48	1.55					2	.50	2	1.50	3	3.00	50	340	816
Wayne Iron & Lumber Co. (Janice)	9	1.50											176	1,217	2,424
Wayne Iron & Lumber Co. (Sawyer)	16	1.50											159	5,757	10,690
John Zippy														100	260
Totals	94		1		1		4		5		47			27,295	$70,580

IRON—Continued.

Table 6—Showing Name of Operating Company, Capitalization, Investment, Incorporation and Location of Land.

Name of operating company.	Location of mine.	Capitalization.	Amount invested in land and plant.	Incorporated under laws of	Land controlled.	Location of land.			No. shafts.	Average depth of shaft.
						Section.	Township.	Range.		
Mo. Copper Mt. Mining Co.	Sullivan, Franklin county	$1,500,000	$50,000	Arizona	7,034				4	115
W. H. Smallinger	Iron Mountain, St. Francois county				16,000					
Puxico Iron Co.	Puxico, Stoddard county	50,000	50,000	Missouri	100	26	27	8		
S. Landau	Keener, Butler county				400					
Northwestern Cons. L. L. & I. Co.	Wappapello, Wayne county	75,000	72,375	Minnesota	8,520		27	7 & 8		
Ruby Mt. Iron & Furnace Co.	Chaonia, Wayne county	100,000	3,500	Missouri	5,000					
Wayne Iron & Lumber Co. (Janice)	Greenville, Wayne county	2,500,000		Missouri	87,000	1	27	5		
Wayne Iron and Lumber Co. (Sawyer)	Greenville, Wayne county					34	28	5		
John Zippy	Greenville, Wayne county				80	27	29	6		

IRON—Continued.

Table 7—Showing Mine Equipment.

Name of operating company.	Location of mine.	Mine equipment.													No. ore acres worked	Arc light in feet	Kind of ventilation
		No. of concentrating plants	Daily capacity in tons	No. of engines	No. of pumps	Capocity per min. in gal.	No. of boilers	No. of drills	Kind of power	No. of hoisters	Kind of power	No. of crushers	No. of tables	Kind used			
Mo. Copper Mt. M'g. Co	Sullivan, Franklin Co.	1		1	2	1,000	3			2	Steam	3	1	Card	4	6	Natural.
W. H. Smallinger	Iron Mt., St. Francois county			3	2	280	7	1	Steam	1	Steam				1	22	Natural.
Puxico Iron Co.	Puxico, Stoddard Co.	1	50	2	2		1	2	Steam			1			2	20	Natural.
S. Landau	Keener, Butler Co.														3	50	Natural.
Northwestern Cons. L. L. & I. Co	Wappapello, Wayne county																
Ruby Mt. Iron & Furnace Co.	Chaonia, Wayne Co.														8	12	Natural.
Wayne Iron & Lumber Co., (Janice)	Greenville, Wayne Co.																
Wayne Iron & Lumber Co., (Sawyer)	Greenville, Wayne Co.																
John Zippy	Greenville, Wayne Co.																

CLAY.

Table 9—Showing Name of Operator, Landowner, Location of Mine, Chapitalization and Amount Invested.

Name of operator.	Name of land owner.	Location of mine.	Capitalization.	Amount invested in land and plant.	Incorporated under laws of
Aluminum Flake Co	Same	Truesdale	$500,000		Maine.
Bausch, Frederick E.	Bausch, Frederick E	Clayton			
Blackmer & Post Pipe Co	Marie C. Barrioz	St. Louis		$3,032	Missouri.
Connell, J. P.	J. P. Connell	Glencoe		1,500	
Evans & Howard Fire Brick Co	Evans & Howard Fire Brick Co	St. Louis	500,000	500,000	Missouri.
Gulken, Theodore	Laclede-Christy C. P. Co	St. Louis			
Highlands Fire Clay Co	A. C. Stuever	St. Louis		30,000	
Hydraulic Press Brick Co		St. Louis	1,000,000		Missouri.
Jonesburg Clay and Mining Co	Jonesburg Clay and Mining Co	Jonesburg	100,000	35,000	Missouri.
Krummel & Buckner Fire Clay Co	Henry Krummel	St. Louis	2,000	2,000	Missouri.
Laclede-Christy C. P. Co	Laclede-Christy C. P. Co	St. Louis	4,000,000		Missouri.
Mexico Brick and Fire Clay Co	Same	Mexico	100,000	100,000	Missouri.
Mitchell Clay Mfg. Co	Ewing Estate	St. Louis	50,000	66,057	Missouri.
Ouachita Coal & Clay P. Co	Same	Versailles	1,000,000		Arizona.
Parker Russell M. & M. Co	Shaw Estate	St. Louis	750,000	320,141	Missouri.
Roberts & Son	Same	St. Louis		20,000	
St. Louis Vitrified and Fire Brick Co	Same	St. Louis	135,000	124,500	Missouri.
Versailles Fire Brick and Clay Co	Same	Versailles	75,000	114,798	Missouri.
Wade Bros. Cons. Co	Hollock Realty Co	St. Louis	2,000	1,500	Missouri.
Western Stove Lining Co	Same	Mexico		8,000	

CLAY—Continued.

Table 10—Showing Locationof Land, Acres of Land Controlled and Kind of Power Used.

Name of operator.	Location of land.					Acres of land controlled.	Kind of opening.	When opened.	No. of shafts.	Power used for		Kind of ventilation.
	Sections.			Township.	Range.					Hoisting.	Haulage.	
Aluminum Flake Co.	33	34	35	47	2	847		1903				Natural.
Bausch, Frederick E.						14	Shaft	1903	2	Electric	Mule	Furnace.
Blackmer & Post Pipe Co.						8	90-ft. shaft	1903	3	Steam	Mule	Natural.
Connell, J. P.			4	44	3	10	Strip pit	1908				
Evans & Howard Fire Brick Co.						150	Slope	1905	3	Horse		Natural.
Gulken, Theodore							95-ft. shaft		1	Electric	Mule	Natural.
Highlands Fire Clay Co.							80-ft. shaft	1904	1	Steam	Mule	Natural.
Hydraulic Press Brick Co.							Shaft	1902	2	Steam	Mule	Fan.
Jonesburg Clay & Mining Co.			13	47	4	360						
Krummel & Buckner Fire Clay Co.						14	92-ft. shaft	1902	2	Steam	Mule	Natural.
Laclede Christy C. P. Co.							65-ft. shaft			S. and E.	Mule	Natural.
Mexico Brick & Fire Clay Co.						50	92-ft. shaft	1906	1	Steam	Mule	Natural.
Mitchell Clay Manufacturing Co.						37	Drift	1907	1	Steam	Mule	Furnace.
Ouachita Coal & Clay P. Co.		22	27	43	18	1,720	Drift	1907				
Parker-Russell M. & M. Co.						30	84-ft. shaft	1907	2	Steam	Mule	Fan.
Roberts & Son						9	75-ft. shaft	1906	1	Horse		Furnace.
St. Louis Vitrified & Fire Brick Co.			23	46	5	58	100-ft. shaft	1908	3	Steam	Mule	Natural.
Versailles Fire Brick & Clay Co.			7	42	17	143		1904		Horse	Horse	
Wade Bros. Cons. Co.							40-ft. shaft	1909	2	Horse	Mule	Natural.
Western Stove Lining Co.							85-ft. shaft	1900		Horse	Hand	Furnace.

CLAY—Continued.

Table 11—Showing Name of Operator, Location of Mine, Tonnage and Value, Kind and Value of Manufactured Products.

Name of operator.	County.	No. of days mine was wrkd.	Ave. No. of min'rs.	Ave. price paid per ton for mining clay.	Ave. No. other help.	Ave. daily wage.	No. of tons of clay mined in 1909.	Value per ton.	Prodct shippd	Manufactured products.	Total value of manufctrd products.	Total value of all clay in 1909.
Aluminum Flake Co.	Warren						548					$548
Bausch, Frederick E.	St. Louis	310	8	$.27	13		15,060		Yes			23,000
Blackmer & Post Pipe Co.	St. Louis	308	6	.25	9		24,108	$.60	No	Flue lining, sewer pipes, etc.		14,464
Connell, J. P.	St. Louis	240	20				25,000		Yes			25,000
Evans & Howard Fire Brick Co.	St. Louis		66				94,978	.47		Fire brick and shapes.	$714,765	54,638
Gulken, Theodore	St. Louis	310	8	.26	6	$2.00	22,233	.68	Yes			15,118
Highlands Fire Clay Co.	St. Louis	264	6	.25	4	2.00	10,560	1.00	Yes		21,120	10,560
Hydraulic Press Brick Co.	St. Louis	300	16	.25	14	2.50	70,000	.50	No	Brick		35,000
Jonesburg Clay & Mining Co.	Warren						370		Yes			309
Krummel & Buckner Fire Clay Co.	St. Louis	241	6	.25	7	2.50	24,100	.85				19,280
Laclede-Christy C. P. Co.	St. Louis	309	14	.28	36	2.00	47,554	1.08				51,358
Mexico Brick & Fire Clay Co.	Audrain	309	16	.25		1.50	15,000	1.00	No	Brick		15,000
Mitchell Clay Manufacturing Co.	St. Louis	300	9	.24	6	2.25	28,332	.75	Yes	Fire brick and tile	60,574	21,249
Ouachita C. & C. Prod. Co.	Morgan	200	9				5,100					5,525
Parker-Russell M. & M. Co.	St. Louis	300	10	.28	12	2.25	28,128	1.22		Tile, fire brick and fire proofing	161.324	26,209
Roberts & Son	St. Louis	250	6		2	2.00	12,500	1.00	No			12,500
St. Louis Vitrified & Fire Brick Co.	St. Louis	283	12		13	1.80	33,489			Fire brick lime kiln Blocks, etc.	110,505	30,140
Versailles Fire Brick & Clay Co.	Morgan	225	7		5	1.65	15,000	.50	Yes	Fire Brick	32,879	7,500
Wade Bros. Cons. Co.	St. Louis	40	6	.27	3	2.25	2,000	1.00	Yes			2,000
Western Stove Lining Co.	Audrain	100	2		4	2.00	5,000	.50	Yes	Fire brick and stove linings	9,048	2,500
Totals			227		134		479,060				$1,110,215	$371,898

SUMMARY—EASTERN DISTRICT.

Table 8—Showing Acreage Controlled, Number Employed, Tonnage and Value of All Products Mined During 1909.

Counties.	Acres mineral land controlled.	Total all classes of employes.	Lead.		Zinc.		Barytes.	
			Tons.	Value.	Tons.	Value.	Tons.	Value.
Audrain	400							
Butler	400	20						
Franklin	7,034	16	20	$800				
Madison	13,691	415	10,569	454,339				
Morgan	1,863	21						
St. Francois	61,146	5,472	202,473	8,442,962				
St. Louis	330	318						
Stoddard	100	40						
Warren	1,207							
Washington	19,201		223	6,309			3,957	$14,251
Wayne	100,600	80						
Jefferson			104	8,594	1,284	$21,186		
Totals	205,572	6,382	213,389	$8,913,004	1,284	$21,186	3,957	$14,251

SUMMARY—EASTERN DISTRICT—1909. TABLE 8—Continued.

Counties.	Iron.		Clay.		Copper, Value.	Cobalt. Value.	Nickel, Value.	Total value all minerals named.
	Tons.	Value.	Tons.	Value.				
Audrain			20,000	$17,500				$17,500
Butler	3,500	$6,560						6,560
Franklin	225	562						1,362
Madison					$145,000	$75,000	$35,000	$709,339
Morgan			20,100	13,025				13,025
St. Francois	15,000	45,000						8,487,962
St. Louis			438,042	340,516				340,516
Stoddard	756	2,268						2,268
Warren			918	857				857
Washington								20,560
Wayne	7,814	16,190						16,190
Jefferson								29,780
Totals	27,295	$70,580	479,060	$371,898	$145,000	$75,000	$35,000	$9,645,919

ACCIDENTS.

EASTERN DISTRICT.

LEAD AND ZINC—EASTERN DISTRICT—FATAL ACCIDENTS—1909.

Date of accident.	Name of injured.	Occupation.	Age.	Married, single	Orphans.	Name of operator.	County.	Nature of accident.	Coroner's verdict.
Jan. 7	Andy Pollack	Shoveler	28	S	...	Federal Lead Co	St. Francois.	Fall of roof	Accidental.
Jan. 9	John Powalke	Car loader	40	M	5	Des Loge Cons. Lead Co	St. Francois.	Fall of rock from roof	Unavoidable accident.
Jan. 27	Henry Falkner	Blacksmith	45	M	6	Federal Lead Co	St. Francois.	Fall of rock	...
Apr. 24	John Calvin Justice	Foreman	38	M	2	St. Joe Lead Co	St. Francois.	Fall of loose ground	No inquest.
May 13	George Lashley	...	...	...	...	Doe Run Lead Co	St. Francois.	Fall into shaft	Unknown cause.
July 5	Thomas Peters	Cager	45	S	...	Mine La Motte L. & S. Co	Madison	Fell down shaft	...
Aug. 9	John Klicizki	Car loader	40	...	...	Doe Run Lead Co	St. Francois.	Fall of rock	Accidental death.
Oct. 29	Ed Roerk	Shoveler	40	...	...	Federal Lead Co	St. Francois.	Fall of rock	Killed by falling rock.
Nov. 9	Henry Rehkop	Shift boss	36	M	2	St. Joe Lead Co	St. Francois.	Returned on shot	...
Dec. 9	Mike Gudynorvitch	Shoveler	25	S	...	Doe Run Lead Co	St. Francois.	Falling from cage	Falling into shaft.
Dec. 10	Chas. Cooper	Oiler	62	M	6	Doe Run Lead Co	St. Francois.	Explosion	Explosion.

LEAD AND ZINC—EASTERN DISTRICT—NON-FATAL ACCIDENTS—1909.

April 16	Frank Francis	Roper	24	S	...	Madison Lead & Land Co	Madison	Injured by trip of cars	...
Jan. 9	Micklo Babie	Miner	...	...	...	Des Loge Cons. Lead Co	St. Francois.	Fall of rock from roof	...

CLAY MINE ACCIDENTS—1909.

Date of		Name of injured.	Occupation.	Age	Married, single	Orphans	Name of operator.	County.	Nature of accident.	Fatal or non-fatal.	Coroner's verdict.
Mar.	17	John Nagge	Miner	30	M	...	Hydraulic Press Brick Co	St. Louis.	Struck by falling prop	Non-fatal	
Nov.	17	Martin Harness	Timberman	21	S	...	Evans & Howard F. B. Co	St. Louis.	Fall of roof	Non-fatal	
Dec.	7	Frank Biggers	Cager	33	M	5	Mexico Fire Brick & Clay Co	Audrain.	Struck by cage	Fatal	Not known.

LEAD AND ZIND MINE ACCIDENTS—1909.

Eastern District—Fatal.

JANUARY 7th—Federal Lead Company, mine No. 6, Flat River, St. Francois county. Andy Pollack, age 28, occupation, shoveler. Death caused by falling of rock from roof. *Remarks by Inspector Pirtle:* I went to the scene of the accident and investigated the conditions leading to the cause. I found that the roof had fallen, covering a space 20 by 40 feet, and running in thickness from 3 to 8 inches, and containing a large quantity of lead. The miners working under same considered it safe, but in my opinion they used very poor judgment, as the rock was not so thick that by proper sounding they would have found it to be loose. The ground was of a rotten, wet nature, full of lead.

JANUARY 9th—Desloge Consolidated Lead Company, shaft No. 4, Desloge, St. Francois county. John Powalke, age 40, occupation, car loader. Death caused by fall of rock from roof under which deceased was working. Powalke had been in the employ of this company for three years and was considered a careful man. The coroner's verdict was unavoidable accident.

JANUARY 27th—Federal Lead Company, shaft No. 7, Flat River, St. Francois county. Henry Falkner, age 45, occupation, blacksmith. The verdict of the coroner's jury was: "We, the jury, find the deceased came to his death by back falling on him while at work underground for the Federal Lead Company."

APRIL 24th—St. Joseph Lead Company, mine No. 14, Bonne Terre, St. Francois county. John Calvin Justice, age 38, occupation, mine foreman. Death caused by fall of loose ground. Miners were taking a piece of loose ground, Justice was standing in front of it, and as it fell it pitched forward, with Justice beneath it.

MAY 13th—Doe Run Lead Company, Flat River, St. Francois county. George Lashley, a miner, came to his death by falling in shaft by an unknown cause. The company in its report of the accident said: "Lashley came up on cage at our No. 4 shaft with three other men, and fell down the shaft in some mysterious way after the cage had landed the men on top."

JULY 5th—Mine La Motte Lead and Smelting Company, shaft No. 4, Mine La Motte, Madison county. Thomas Peters, age 45, occupation, cager. Death resulting from injuries received from falling into shaft. Peters was underground near the shaft at the top level and had run a car on the north switch of the double cageway instead of running same, as he should have done, on the south switch. He evidently held on to the car, and was pulled into the shaft, falling something like 20 feet, crushing his skull.

AUGUST 9th—Doe Run Lead Company, shaft No. 9, Flat River, St. Francois county. John Kliciski, also known as John Opalka, age 40, occupation, underground car loader. Killed instantly while loading a mine car with two other Hungarians, a large piece giving way from back, falling on him. *Remarks by Inspector Pirtle*: I examined the conditions surrounding this accident, and in my opinion there was evidently a loose back, which, if examined thirty minutes before accident occurred, as is claimed, by competent men, should have disclosed the defect and averted the accident. The primary cause of the accident was due to the drilling of a roof hole too high, and thereby cracking the dead ground back. The loose ground or rock should have been taken down at once by the men looking after the roof.

OCTOBER 29th—Federal Lead Company, shaft No. 7, Flat River, St. Francois county. Ed Roerk, age 40, occupation, shoveler. Instantly killed by fall of piece of back.

November 9th—St. Joseph Lead Company, shaft No. 8, Flat River, St. Francois county. Henry Rehkop, age 36, occupation, shift boss. Returned on shot, receiving serious injuries from which he died November 16th. After the men had fired the holes they waited thirty minutes on a missed hole, then went back, took out some of the tamping and re-fired the hole with a nifter. This nifter exploded and set fire to the fuse leading to the old charge. The men having heard the nifter explode thought it had exploded the old charge and returned to the stope. As they reached the place the old charge went off, injuring Rehkop fatally.

December 9th—Doe Run Lead Company, shaft No. 2, Flat River, St. Francois county. Mike Gundynorvitch, age 25, occupation, shoveler. Deceased attempted to get on cage after the gong had been sounded to lower and cage had started to move slowly. Two other men who were on the cage at the time warned him to stay off, but he did not heed their warning and fell to the bottom of the shaft.

December 10th.—Doe Run Lead Company, shaft No. 6, Flat River, St. Francois county. Charles Cooper, age 62, occupation, oiler and compressor. Death by explosion of air receiver by an unknown cause.

Eastern District—Non-fatal.

January 9th—Desloge Consolidated Lead Company, shaft No. 4, Desloge, St. Francois county. Micklo Babie, occupation, miner; left leg broken and right ankle bruised by fall of rock from roof while at work under same.

April 16th—Madison Lead & Land Company, Fredericktown, Madison county. Frank Francis, age 24, occupation, roper. Francis was bringing in his trip of cars, and was standing on the front end of the front car in the act of unhooking his trip. He failed to unhook the rope, and it caught him, throwing him against the loaded car, which bumped against an empty trip, breaking his leg between the hip and knee. Besides a compound fracture, his leg was badly lacerated.

REPORTS OF ACCIDENTS—1909.

Clay Mines—Fatal.

December 7th—Mexico Brick & Fire Clay Company, Mexico, Audrain county. Frank Biggers, age 33, occupation, bottom cager. He had sent up a cage of clay on one side of double shaft when a descending empty cage struck him, crushing his skull. Just how the accident occurred is not known, but it is presumed that he opened the shaft door and looked up the shaft.

Clay Mines—Non-fatal.

March 17th—Hydraulic Press Brick Company, St. Louis. John Nagge, age 30, occupation, miner. While deceased was at work in mine No. 5, a rock slipped and knocked out prop and cross-bar. The prop struck him in the back, causing a fracture in the dorsal.

November 17th—Evans & Howard Fire Brick Company, Clayton, St. Louis county. Martin Harness, age 21, occupation, timber man. While fixing a place in which to set a truck, a portion of the roof fell and struck him, dislocating his left knee and right hip and considerably bruising him.

MINE INSPECTIONS.

EASTERN DISTRICT.

INSPECTIONS, LEAD AND ZINC

Eastern District.

By I. J. Pirtle.

Eastern Lead Company, Fredericktown, Madison county.—This company operates on 413 acres of land owned by the Mine La Motte Lead & Smelting Company of Mine La Motte. The company is incorporated under the laws of New York and is capitalized for $600,000 having $200,000 invested in land and plant.: James M. Hadden is president and general manager of the company and R. B. Magrath is treasurer and acting secretary. The company operates two drifts. I made a thorough inspection of this property on March 30th and found the mine in the very best condition possible. All of the machinery is practically new and the whole plant is carefully managed with regard to protecting the employees in and about the mine against injuries. On date of inspection 60 miners were employed; two men were engaged in looking after the roof, and the top and mill men numbered 42. The concentrating plant has a daily capacity of 300 tons. Ventilation in the mine is by natural means direct from the surface. The company recently installed a number of one-man air drills; also a 250 horse-power boiler. The plant suffered losses during the year, being shut down in August owing to low price of ore and high cost of production.

Madison Lead and Land Company, now known as the Phoenix Land Company, of Fredericktown, Madison county. This company on date of inspection, February 21st was operating two shafts, 148 and 100 feet in depth respectively, two miles northwest of Fredericktown. The company controlled 1580 acres of land in Madison county and gave employment to 127 miners. The mines were operated only 182 days during 1909 and on August 4th, were closed down the company going into bankruptcy on August 18th. The company has reorganized and is now known as the Phoenix Land Company. On date of examination I found the mines of this company in safe and sanitary condition. Every precaution was taken against accidents, and the law requiring safety appliances was strictly complied with. The timbering in the shaft was good and the roof in the mine was carefully trimmed. All powder was stored in a magazine on top and only enough for one shift was taken underground. The company issues strict orders to take down all loose ground before setting up machines, and each shift is required to go over the roof and sides and see that no loose rocks or boulders are left. On January 1st the company completed the erection of a new 500 ton concentrating mill which was put in operation.

Mine La Motte Lead and Smelting Company, Mine La Motte, Madison county. This company is incorporated under the laws of New Jersey, capitalized for $3,000,000. The company owns and controls 37,000 acres of land and has invested in land and plant $2,437,783. The main office of the company is at 213 Sixth avenue, Pittsburg, Pennsylvania. During 1909 the company operated three shafts, No. 4, 170 feet deep; No. 2, 90 feet deep; and Pirtle shaft, 90 feet deep. The average number of miners employed was 104, with 41 top men, 51 mill men, and 12 men employed besides. During 1909 the company sunk a new shaft known as shaft No. 14, but it was not put in operation. I made a careful inspection of the top structures and underground workings of the company on February 23d, and found everything in and about the mine in good condition except that I found some loose roof, which I ordered taken down. The mines are worked with care and the operators are careful in regard to providing health and safety for the men employed. The mine was operated every day during 1909, and there were no strikes or labor troubles. On May 17th I made a second inspection of shafts Nos. 2 and 4, also Pirtle shaft, and found all in very good condition. The loose roof complained of on my first visit to these mines had been taken down. All machinery and saftey appliances were in good working order. I returned on September 28th and made an examination of shaft No. 2 and Pirtle mine. I found some loose ground in roof and ordered same taken down at once. Everything else was in good order. On September 30th I inspected shafts Nos. 4 and 14, the latter a new shaft just being made ready for operation. The company was putting in new head frames for shaft. A new bin for the reception of ore, as hoisted from the mine, was also in course of construction. This bin has three compartments and when completed will hold about 800 tons of ore. The ore will be loaded from this bin into cars. A number of other improvements are being made, among which is a new foundation for engine and compressor, and a new boiler and engine room. With these improvements the plant will be up-to-date in every particular. A visit to the mines of this company on October 30th convinced me that the company is taking every precaution to prevent accidents and that every requirement of the mining laws was being complied with. I again visited shaft No. 4 on November 24th and carefully inspected the underground workings. I found the roof carefully trimmed and as safe as same could be made.

North American Lead Company, Fredericktown.—This company is capitalized for $2,000,000 under the laws of Ohio. The company owns 850 acres of land in Madison county, and has $500,000 invested in land and plant. Two shafts are operated, No. 2 at a depth of 300 feet, and No. 3 at a depth of 200 feet. All shafts are properly safe-guarded by enclosures. The cages are provided with safety catches and swivels, and the seven-eighth inch wire cables were in first-class condition on date of inspection, March 29th. Good ventilation is provided in the mines, using air-compressors and vent holes. The company is now cutting a tunnel to connect shafts Nos. 2 and 3, which will give to these mines natural ventilation. The powder is safely stored three-fourths of a mile from the plant. A small supply is kept near the shaft and only enough for one day's use is taken into the mine. The mines of this company produce lead, copper, nickel and cobalt oxide. A smelting plant for the smelting of nickel, copper and cobalt has been built and put into operation. I found the mines in good condition and carefully operated. The machinery and general equipment is first class. I examined the roof and, finding same shelly in some places, I recommended that the roof be arched, which, I believe, will make it more safe.

I made a second inspection of the mines of this company on May 22d, finding everything in good order. There was only one shift being worked at this time owing to the fact that the refining plant is not sufficiently large to handle the ore.

I again visited these mines on October 1st and 2d and found everything in very satisfactory condition. In order to improve the ventilation I ordered the work on the tunnel connecting shafts Nos. 2 and 3 pushed as fast as possible. I was informed that the company's new engine will be started in a few days with the aid of which the output of copper, cobalt and nickel will be greatly increased.

I returned to these mines on December 20th for the purpose of investigating the progress made with the tunnel connecting shafts Nos. 2 and 3. I was anxious to provide better ventilation and to insure a more safe condition in case one of the shaft buildings should burn. I served the following written notice on the company: "You are hereby notified to extend an air line from the compressor located in your refinery, about midway between your shafts Nos. 2 and 3, to the two-inch hole east of No. 2 and the six-inch hole northeast of No. 3. You will also push to completion the tunnel connecting shafts Nos. 2 and 3." The president assured me that the work of connecting the mines would be pushed with all possible speed and that my recommendations would be complied with. Ventilation in the mine is not bad from the fact that but one shift is now being worked, but the danger I feared was in case of fire.

Jackson Revelle Mine is located eight miles south of Fredericktown, in Madison county. The company operates one shaft 170 feet deep on a fissure vein. The walls on either side of the fissure are granite. The rocks are porphyry and conglomerate. The fissure vein averages 24 inches. The size of the shaft is 7 by 16 feet. The company has a complete outfit for working the mine. Work was suspended in 1904 on account of lack of funds, and no work has been done since. The company had the ore from this mine assayed and claim that the assay shows lead, zinc and silver in paying quantities. I examined the mine on August 30th.

Prospects in Madison County.—On August 31st I visited some prospect work in Madison county, about eight miles southeast of Fredericktown. Work is principally done by farmers, and there are good showings of lead and iron and other ores. There has been but little development work done in this part of Madison county.

ST. FRANCOIS COUNTY.

Doe Run Lead Company, at Doe Run, one of the big operators in St. Francois county, owns and controls 6,548 acres of land in this county, and has $13,367,870 invested in land and plant. The mining operations of this company are carried on through seven shafts—Nos. 1 and 4 are at Flat river; Nos. 2 and 3 at Central, about one-fourth mile west of Flat river; Nos. 9 and 11 at Esther, two miles east of Flat river; No. 6 at Elvins, one mile south; and No. 8 at Mitchell. About 1,500 men are employed at all the plants, the proportion of mine to mill labor being about three to one. The main office of the company is at Doe Run, while offices are also maintained at Central and Bonne Terre. They made an investment of $614,870 during 1909 for construction on plants and improvement work. Among the improvements made, the new 2,000-ton mill at Elvins is worthy of special mention, and we report a description of same given by Albert H. Fay in the Engineering and Mining Journal. "The new Elvins plant at the Doe Run Lead Company has a capacity of 2,000 tons per day, and is built in four units of 500 tons each. Any one or all of the units may be operated as required. The building is constructed of steel throughout, with corrugated iron siding. All the floors are reinforced concrete, supported by steel girders. The size of the building is as follows: Crusher floor, 88x144 feet; jig floor, 45x144 feet; table floor, 48x208 feet. The entire width of the building is 181 feet and the total area is approximately one acre. The steel ore bin is 20x144 feet, and 19 feet deep; with a standard gauge railroad track on top. The mill is heated by three Baltz hot-air heaters, one in the basement, two on the crushing floor.

"All the water for the new mill is pumped from a reservoir in Flat river. Two 150 horse-power motors operate two 2-stage, 10-inch vertically mounted tudbine pumps, each having a capacity of 2,000 gallons per minute under a head of 175 feet. The pipe line is 14 inches in diameter and about 1 mile long. Just above the mill is a large reservoir 150 feet square, 12 feet deep, built in the clay soil on a limestone bedrock, from which the water runs by gravity to the mill. A large percentage of the water from the mill, after passing through the dewatering screen, goes to a settling pond from which it is pumped to the above reservoir by two single-stage centrifugal pumps, each operated with a 75 horse-power motor.

"One special feature of the mill is that the crushing is done dry. No water is added until after the ore passes the second set of rolls, where the water and ore both enter the third set of trommels. These trommels are 3x10 feet with 3-mm. screens. The fine material from this trommel passes through a Richards classifier from which slimes go to the Wilfley tables independent of the Hancock jig. The removal of all the slimes at this point is another feature of this mill. The 3-mm. sand is sent to Harz jig while the coarse material from 3 to 9 mm. is treated on a Hancock jig. The Hancock jig produces heads from two cells, middlings from two and tailings from one. The Harz jig produces heads from the first two cells, middlings from the second and tailings from the overflow.

"The middlings from the Hancock jig pass through a 3-mm. trommel from which the oversize goes to a pair of 14x30 inch rolls and by bucket elevator to the trommel in front of the jigs. All the 3-mm. size goes through a Huntington mill to a dewaterer. The spigot producer is drawn off to the elevator and goes back to the trommel in front of the Hancock jig. The overflow passes to a 6-foot V-shaped settling box, from which the overflow goes to the slime pond, and the spigot product to a Frue vanner. In this way all the middlings are crushed to pass a 3-mm. screen and then enter the Harz jig and slime-treatment system.

"Just in front of the Harz jig are two 20-inch Richards vortex classifiers, the overflow from which passes to two dewatering boxes; the spigot product passes to the Harz jigs. The spigot product from the dewatering boxes goes to two Richards annular classifiers which produce three products distributed on Wilfley tables. The overflow from the dewatering boxes passes to two 6x10 foot V-shaped settling tanks, the spigot product from which goes to Wilfley tables, and the overflow to the slime pond. The overflow from the annular classifiers also passes through two settling boxes before it reaches the slime pond. Twelve of the tables produce heads, middlings and tailings. The tailings from the first six tables pass off as waste. Those from the second six to a 61foot settling box, yielding a spigot product for the Frue vanner. The middlings from the first six tables go to a single Wilfley table, which yields heads and tailings, and the middlings from the second six pass through a classifier and thence to two Wilfley tables yielding heads and tailings.

"All the lead concentrates are collected in a V-shaped bin, with a scraper conveyor in the bottom which elevates the concentrates to a hopper above the water level of the bin, from where the concentrates are taken by a similar conveyor to the car for shipment. The tailings are conducted to a dewatering screen, then to a 20-inch belt conveyor which runs lengthwise of the mill, on the lower side, with a speed of 280 feet per minute. The waste material is transferred from this belt to a second 20-inch belt which runs at a speed of 350 feet per minute and delivers the tailings on top of the tailings pile. From here the tailings are distributed by water, in launders, although some other system will be installed later, possibly an aerial tram.

"The labor in the mill is reduced to a minimum. All the ore is handled mechanically. About 20 men per shift are required when the mill is running at full capacity. The mill is neat, well constructed and is the result of long experience in the milling of lead ores in Southeast Missouri."

In my work of inspection I find no mines in the State in better condition than are the mines of the Doe Run Lead Company. All of the underground workings are safely managed and the roof is at all times carefully looked after by men especially employed for this purpose. Every provision of the law is complied with and nothing is left undone to provide safety and comfort for the men employed. I went to Doe Run March 2d spending several days inspecting the various mines.

On Ocober 21st I made a second inspection of shaft No. 4, finding same in good condition. Aside from some loose roof, which I ordered taken down, everything was in good shape.

On November 3d I visited shaft No. 8 and found mine in the same first-class condition that I found it on my first inspection.

On November 2d I made the second inspection of shafts Nos. 2 and 3. I found these shafts in good condition except that I found some loose roof, which I ordered taken down, and my order was complied with at once.

On December 27th I visited shaft No. 11. This is a new shaft only recently started and not yet completed. The size of the shaft is 18x8 feet and then down about 60 feet. Some trouble is had in holding the clay until the solid rock is reached. It is the intention of the company to concrete this shaft from the solid rock to the surface, which I believe is much better than timber. This new shaft is located two miles south of Flat river.

On December 28h I made a second inspection of shaft No. 6. The company was at this time installing a new air receiver to take the place of one which had exploded. I found the operations at this mine first class.

Des Loge Consolidated Lead Company.—This is one of the big operating companies of St. Francois county. The company is capitalized for $1,000,000. and is incorporated under the laws of Missouri. The company controls 4,025 acres of land in St. Francois county and operates six double compartment shafts having an average depth of 300 feet. The equipment for No. 6 shaft was recently completed to handle the big output. This new shaft has a capacity of 600 tons in eight hours. It has steel head frame, Litchfield self-dumping cages, Blake crushers for fine crushing, Gate crushers for secondary crushing; also, elevators and screens for handling material. On dates of inspection, March 17th and 18th, I found 218 men employed underground, but this number is far short of the average number employed. This company is very careful in the management of the works, and no concern operating in the State is more strict in its supervision and more considerate in providing health and comfort for the laborers in their employ. Each set of shot firers is required to report all missed holes; special men are employed to look after the condition of the roof and keep same in best of condition to prevent accidents from falls. Large changing rooms with hot and cod water baths are maintained for the workmen, and every convenience and comfort is supplied without regard to cost. It is indeed a pleasure to visit and examine a plant such as the Des Loge company maintains. The management is eager to get suggestions from the inspector for improvements and any correction asked is quickly and willingly complied with.

During 1909 I made frequent visits to this plant, always finding same in good condition. On one of these visits, November 11th, when I inspetced shafts Nos. 3, 4 and 6, I found some loose roof in one deparment of the mine and ordered same taken down. The mine captain complied with my orders at once, first ordering the men working at this particular point to leave, and instructing others whose duty it was to look after the roof, to put same in good and safe condition. The company rarely has trouble with the men over wages, and the reason is plain when the fact becomes known that in July, 1909, the company voluntarily raised the wage-scale of all employees, restoring previous reductions necessitated by low prices of ores.

Federal Lead Company.—This is one of the five big companies operating in St. Francois county. Capitalized for $2,000,000 and controlling 1,500 acres of land in St. Francois and Washington counties. The company had, on date of inspection, March 12, 1909, 578 miners employed on surface and underground, and in addition to this number had 354 top and mill men employed. Ten shafts are operated at an average depth of 415 feet, and all are provided with outlets for escape. Among the improvements made by this company during 1909 may be mentioned one additional shaft, known as Shaft No. 11, put on an ore-producing basis; the installation of chain grate stokers and additional cooling towers at No. 3 power plant. It must be said in justice to the management of this company that the mine and milling equipments are always found in as nearly perfect condition as they can be made. Special care is taken in providing good safe roof in the mines, and the machinery and safety appliances are of up-to-date make and in first-class order. Powder for use in the mines is safely stored in a powder house one and a half miles from the works and only enough is taken underground to supply immediate requirements. The immensity of the plant requires me to make frequent visits and to sub-divide my inspection work. On one of these visits, November 1st, when I inspected shaft No. 7, I found some loose roof, which I ordered down and the company lost no time in making this correction. On another visit I found loose roof in the mine at shaft No. 1 and this too, was quickly remedied, the company being anxious to provide safety for the men in their employ. The sanitary conditions in the mines of this company could not be better. Commodious changing rooms are provided where hot and cold bath arrangements are maintained at all times. I have no trouble in getting any improvement that will better conditions for the men at work for the Federal Lead Company, and I rarely find cause for complaint.

St. Louis Smelting and Refining Company.—This is one of the big operators in the St. Francois lead belt. Capitalized for $2,000,000. The company has $1,200,000 invested in land and plant, employing on date of inspection, March 12th, 350 miners and 75 top and mill men. In addition to these employes the company has a large number of men working in various departments of the big mining plant which will bring the total number of employes up to 600 or more. The company operates four shafts with an average depth of 366 feet. On my frequent visits to the mines of this company I found the underground conditions fairly good and I must say the company makes a special effort to keep everything in and around the plant in safe and sanitary conditon. The mines of this company require extraordinary care and attention, owing to the formation, the rock which forms the roof being very shaley and treacherous. There is also considerable slate in the roof, which, when exposed to the air, slacks and becomes rotten and dangerous to work under. Considering these conditions and the few accidents reported, it is but the best proof of good management and painstaking supervision. A careful daily inspection of the roof is made by men employed by the company for this work and all loose material is taken down before the miners go to work. On one of my visits to these mines, November 17th, I discovered some loose ground and calling the mine foreman's attention to it, he had same arched and made safe for men to work under. I found all cages and hoisting machinery in the best condition and every requirement of the law fulfilled to the letter. Ventilation is secured by natural means, the shafts being connected by tunnel and air ample in quality and quantity is supplied. The sanitary conditions are first-class and the company maintains a good changing room for employes, with hot and cold bath arrangements.

St. Joseph Lead Company.—This is one of the largest of the mining and smelting companies operating in the State, with a capitalization of $20,000,000. The company has invesed $7,500,000 in land and plant and gives employment to 1,600 men. Of this number 950 are miners, 65 are employed to look after the condition of the roof, 519 are top and mill men, and some fifty men are doing prospect work. Eight shafts, with an average depth of 353 feet, were operated during 1909, and one new shaft was opened, but not operated. The two concentrating plants of the company have a combined daily capacity of 3,000 tons of rock. I made frequent and careful inspection of the mines of this company, making detailed report of my findings to the department. Aside from slight defects, to which I called the management's attention, and which were speedily remedied, I found everything in and about this big mining plant in the very best condition possible. Mr. Monie, the mine superintendent, is a very efficient man, and the care exercised by the management in making the working places safe and healthful is a feature deserving highest praise. It has always been a pleasure to me to inspect these mines, finding them, as I did, always in the very best condition. The management is always anxious that I inspect every portion of their underground working places and any suggestion offered to improve conditions or to add to the safety of the men is readily accepted. The management realizes that some of the ground is very treacherous and must be closely watched to keep these places reasonably safe, and no time, money or labor is spared in giving the men working underground every protection possible.

Valle Mining Company.—The Valle mines are located in Jefferson and St. Francois counties. The officers of the Valle Mining Company are Watler R. Rozier, president; Henry L. Rosier, vice-president, and G. Anton Reich, secretary. The company controls about 5,000 acres of land, and at the time I made inspection of the mines, had twelve shafts in working order, averaging in depth from 90 to 225 feet. All shafts were well timbered. No machinery was installed, the hoisting and haulage being done by horse power. Ventilation in the mines is supplied by natural means, circulation of air being provided by connecting the shafts. On date of inspection, April 3d, 1909, 75 men were at work in the mines on royalty. The company has a 40-horse power engine to furnish power for the lead smelter when in operation. I found conditions in and about the mine fairly good.

FRANKLIN COUNTY.

Wrisburg Mining Company, St. Clair, Franklin county.—This mine is located eight miles south of St. Clair. W. E., Chas. G. and E. F. Wrisburg, own the land, comprising eighty acres, and operate the mine. The main office of the company is at 355 Henrietta street, St. Louis. I made an inspection of this mining property on May 27th and made report of my finding as follows: Depth of shaft, 75 feet; top of shaft enclosed; timber in shaft and mine good; power used, steam and air; machinery in use, boiler, pump and compressor; instead of cages buckets are used, and a one-half inch cable, in good order, is on the hoister; trap doors are provided; the trucks in the mine are pushed to the shaft by men; two air drills in use; ventilation supplied by two shafts is good; powder is kept in box at safe distance from the mine, and only enough for immediate use taken underground. On date of inspection seven men were employed in mine and on top. This mine appears to be a fissure. Worked for several hundred feet, the average width of the fissure is six feet. The mine is in good condition.

PHELPS COUNTY.

W. D. Baldwin is prospecting two miles southwest of Newburg, in Phelps county. Mr. Baldwin controls 84 acres of land in this section. On date of my visit, December 2d, I found a shaft sunk to a depth of 94 feet. The timbering in the shaft was good. A horse hoist had been installed and work had commenced with hand drills, three men being employed. The operator is sinking for lead without first drilling the ground. I advised him to drill first, otherwise he would find it very expensive prospecting.

Newburg Mining and Drilling Company.—This company is operating two and a half miles south of Newburg, in Phelps county. C. F. Dana is president of the company, and the land is leased from A. C. Niles of Rolla, Missouri. On date of inspection, December 2d, 1909, I found the following: Shaft sunk to a depth of 120 feet; timbering in shaft good; 15 horse-power engine and boiler and a hoist installed; one-half inch cable in place; two Sullivan drills; building for hoisting house and shop in course of construction; one small crusher ready for work. This mine has lead and zinc. They have gone through six or seven feet of zinc and lead. Have also cut lead and zinc in bottom of shaft.

J. B. Holman of St. Louis is prospecting one mile east of Newburg, in Phelps county. He controls eighty acres of land and has two miners employed. I inspected his prospect on December 3d. This place is in the side of a hill. There is some outcropping of lead and zinc, but not enough development work done to know if same will pay to work.

James F. Hughes Company.—This company has leased ten acres from the Newburg Mining and Drilling Company and is prospecting three miles southwest of Newburg. I inspected this prospect on December 1st. On date of inspection a shaft was sunk 45 feet deep. The timbering in the shaft was good. A horse hoist was installed, two hand drills were worked and six men were employed. There is lead and zinc in this shaft, but not in paying quantities.

MONITEAU COUNTY.

Cook Mining and Milling Company.—There is a lead and zinc mine near California, in Moniteau county, owned by C. M. Cook, and operated by the Cook Mining and Milling Company. This company controls 187 acres of land. Two shafts are sunk at a depth of about 85 feet. The company has two 75 horse-power engines, boilers, two steam drills and a very good concentrating plant, all under good roof. I visited the mine on September 8th and was informed by Mr. Cook that the company expects to commence operations in a short time.

Miller, Shelding & Bay.—I visited a prospect on September 10th, twelve miles northeast of California, in Moniteau county, where Herman Miller, Clyde Shelding and J. W. Bay are working a lease. These men had several thousand pounds of lead ore mined and on the surface ready for shipment. This ore is pure galena and the indications are that they have a good pocket of lead ore.

MORGAN COUNTY.

Monarch Coal and Mineral Company.—On September 8th I made an exaamination of the mining plant of the Monarch Coal and Mineral Company, located at Barnett in Morgan county. The mine operated by this company produces lead, zinc and coal, and work is done through an open cut. They have forty feet of coal with lead and zinc between the layers of coal. This is a remarkable deposit, a formation not often found. The company is well equipped for handling these products. The mine is in good condition.

COLE COUNTY.

Bruning Brothers Mining Company.—On July 10th I visited the mine of C. S. Glover & Company, operating a lead and zinc mine on land owned by J. F. Campbell, and under first lease to Bruning Brothers Mining Company. The mine is located near Russellville, in Cole county. A shaft 50 feet deep has been sunk and the top of the shaft is covered. I examined the timbering in the shaft and found same good. A steam engine is on the grounds, but on day of visit the mine was not operated on account of some trouble with the operators. This mine would give very good results if worked in a business-like manner.

INSPECTIONS—IRON MINES.

By I. J. Pirtle.

National Iron Mining Company, Keener, Butler county. I visited this mine on June 12th. I found that Haggard Brothers were operating an open cut, employing 12 men. The equipment comprises a gasoline engine and a log washer. Considerable ore is mined and shipped.

Williamsville Iron Company.—The officers of this company are: James Stewart, president; C. E. Fryerberger, vice-president, and Marcus Mack, secretary and treasurer. The company has offices in the Pierce building in St. Louis. I visited the company's mine near Williamsville, in Wayne county, on June 11th. I found 25 men at work in an open cut, one washer of 500 tons daily capacity, engine, boiler and pumps. At the time of my visit the company had just installed the washer and if same proves a success I believe iron ore mining in Wayne county will receive quite an impetus.

St. Louis Blast Furnace Company.—This is one of the iron ore mining companies of Wayne county, operating on the open cut order. I visited their mine on June 11th, finding ten men employed. The manner of operating the mine was safe and left no room for criticism.

Rock Island Mining Company.—This mine is located near Leslie, in Franklin county. The main offices of the operatng company are maintained in the Missouri Trust Building in St. Louis, and the landowner from whom the operators have leased is August Baunst of Leslie. I visited the mine on May 28th. I found that the company had just commenced tunneling in an open cut; steam power is used and haulage in the mine is by engine; two steam drills were at work on day of inspection and the total number of men employed was 45. This mine has switch connection, three and one-half miles long, with the Rock Island railroad. Besides lead ore this company also ships large quantities of sulphur. The mine is in good condition.

Smallinger & Albers control 16,633 acres of land in Iron county. This firm operates on the incline plan near Iron Mountain, with steam power for haulage. I visited the mine on June 10th, at which time 8 miners and 32 top men were employed. This company is reopening the mine known as the Iron Mountain Iron Mine. Tunnels are being cut and the old abandoned shafts are being pumped out. The prospects are very encouraging. I was informed that the company cleans from 30 to 40 tons of iron by hydraulic power daily.

Smoot Iron Mines are located one and a fourth miles from Taskee, Wayne county. The land is owned by E. L. Smoot, of Taskee, Missouri. This mine shows a good out-cropping of iron and the grade of ore is good. Six men were employed on date of inspection, September 16th. Leaving the Smoot mine I visited a place one and a half miles from Williamsville, the land being owned by L. A. Pratt. Here I found a light out-cropping of iron on both sides of the county road. Four miles from this place on the same road I found a hill with a heavy out-cropping of iron. This land is owned by Mr. Chipton, and I was told some development work had been done here. At Taskee there is a good out-cropping of iron. Some development work has been done and the chances are favorable for a good deposit here.

Alley Mine.—This mine is located two miles southwest of Greenville and shows surface out-cropping. Considerable work has been done here with 20 or 30 tons of ore mined and ready for shipment.

Sawyer Mine.—This mine is owned by the Wayne Iron and Lumber Company. On date of my visit, September 17th, no work was being done. I found here a very fine face of ore extending 200 feet long and perhaps 40 or 50 feet thick. The mine is located one and a half miles southwest of Greenville.

Burton Mine, located on the Williamsville and Greenville branch, near Camp No. 9, six miles northeast of Greenville, shows good out-croppings and plenty of ore, but the quality of iron examined was porous, and hard to separate from the flint.

King Mine.—This mine is also owned by the Wayne Iron & Lumber Company. On date of visit, September 17th, 14 men were employed. The working face shows 17 or 18 feet of ore. It is evidently a good mine.

Janice Iron Mine, owned by the Wayne Iron and Lumber Company, has a working face of 17 feet. Eight men were at work on September 17th. The mine is located four miles southwest of Greenville.

Myers Iron Mine is located five and a half miles northeast of Greenville, and is owned by the Wayne Iron & Lumber Company. This mine has a good boulder formation, and as it appears, in quantity to pay operating.

Zippy Mne, owned by Mr. Zippy, and located five miles northeast of Greenville, shows good outcropping of iron. On date of my visit, September 17th, he had 120 tons of iron ready for shipment. The grade seems to be good.

Bennett & Smith.—This mine is located two miles northeast of Greenville, and shows considerable out-cropping besides a ten-foot working face. There have been 900 tons of iron ore shipped from this mine. I visited the mine on September 18th and found conditions very satisfactory.

Switch Back Mine.—There has been considerable development work done at this mine in Wayne county. There seems to be a good deposit of boulder ore here.

St. Francis Iron Company.—This company owns 22,000 acres of land. I was shown some very fine deposits of iron at mines Nos. 1 and 2. A cut has been opened at the base of the hill, and also further up the hill, showing ore in paying quantities. This company is constructing a mill to wash the ore, which, when completed, will cost $27,000. I visited these mines on September 18th.

H. R. Taylor has good out-croppings of iron on his land, located southwest of Chaonia, in Wayne county.

Ruby Mountain Iron Company.—This mine is operated by Mr. Bauman of St. Louis, and is located one and a half miles from Chaonia. Some very good ore has been mined here and 100 tons of ore shipped. Four men were employed on date of inspection, September 22d.

Romine Springs.—This place, eight miles east of Poplar Bluff, Butler county, shows good iron ore out-croppings, and should be developed.

Northwestern Consolidated Land, Lumber & Iron Company.—This company is located at Wappapello, in Wayne county, and controls 12,000 acres of land. Considerable development work has been done by this company.

Hugh Anderson & Company of Chaonia, in Wayne county, owns 600 acres of land near Chaonia, and has good iron ore prospects.

Puxico Mining Company.—The mine owned by this company is operated by T. J. Louis and Otto Reisenweber. The mine is situated one-half mile east of Puxico, in Stoddard county, near the Frisco railroad, an ideal place for a mine on account of shipping facilities. The operators had ten men at work on date of inspection, September 23d. The company has a 1,100-ton crusher, a 135 horse-power engine and a log washer.

INSPECTIONS—CLAY.

By I. J. Pirtle.

Mexico Fire Brick & Clay Company, Mexico, Audrain county.—This mine and manufacturing plant is located one mile east of Mexico. The operating company owns and operates a clay mine, in which 20 men are employed. When first inspected on November 23d, ventilation in the mine was bad and no connection to the escape shaft, recently sunk, had been made. The operator was given notice to complete the escape shaft and connect same with the underground workings within thirty days. The depth of the main shaft is 92 feet, and the timbering in same was good. I inspected cage and cable and found same in good order, except that no safety catches were provided. I ordered bonnet and safety catches put on cage. The powder for use in the mine was safely stored in a magazine on top of the ground, and only enough taken underground for immediate use. When these recommendations are complied with the mine will be in good condition.

Mississippi Glass Company, Vandalia, Audrain county.—This company produces both fire clay and coal, and is located one half mile west of Vandalia. The shaft opening to both minerals is 90 feet deep. The coal seam is 28 inches thick and is worked on the long wall plan. The clay lies underneath the coal, the bed measuring eight to ten feet thick and is mined by the room and pillar plan. The mine is equipped with steam machinery, steam being used for hoisting, operation of the ventilating fan in the mine, and the brick making machinery. The coal taken from the company's mine is used in the brick manufacturing plant. On date of inspection, June 17th, fifteen miners were employed. I found that the fan ventilation was giving poor results by reason of one of the air courses being blocked with mine debris, and I ordered same cleaned at once. Otherwise the mine was in very good condition. Ropes and cages were in good order and cages were provided with safety catches.

Ouachita Coal & Clay Company, Versailles, Morgan county.—This company controls 1,720 acres of mineral land and is engaged in mining coal and clay and manufacturing brick, the brick plant having an output capacity of 60,000 brick daily. The company's equipment includes two Atlas 150 horse-power boilers, a complete line of stiff mud machines, waste heat drying system, and ten round draft kilns of 50,000 tons capacity each. Five or six different clays are found on this property. Both coal and clay are handled by locomotive and side dump cars, the Versailles and Sedalia railroad operating a short line to the company mine and railroad connection is also had with the Rock Island and Missouri Pacifific railroads. On date of inspection, September 10th, 35 men were employed and the underground workings, ventilation and sanitary conditions were satisfactory.

Versailles Fire Brick & Clay Company, Versailles, Morgan county.—This company is engaged in the manufacture of fire brick and building brick, and operates a coal mine and a clay mine. W. S. Dickey is president of the company and F. A. White is superintendent. The equipment in manufacturing plant and mine is of the latest improved type and in first-class order. On date of inspection, September 9th, 50 men were employed at the company's plant. I made a careful examination of everything with regard to safety and sanitation for the workmen and found the most favorable conditions prevailing.

Buffalo Mining Company.—This clay mine is operated by G. P. Clark, who lives at Versailles. The mine is located ten miles southwest of Versailles the operator controlling 480 acres of land. The clay mined here is a kaolin and is taken from an open cut. On date of inspection, September 10th, five men were employed. This mine has been operated for twenty years. The clay is hauled in wagons to Versailles and there shipped by rail. Conditions in and about the mine were very satisfactory.

Bausch Clay Mine.—This clay mine is located on the Eager and Hanley road in St. Louis county. The company maintains an office in the Chemical Building, in St. Louis. I visited the mine on April 21st and found the following equipment and conditions: Depth of shaft, 60 feet; shaft fenced; timbering in mine and shaft in good condition; electric hoist used; cages in good condition; two half-inch wire ropes with counter weights; safety catches used and in good order; no trap door, but safety gates are provided, which are just as good; mule haulage in mine; clay augers used; ventilation supplied by two air shafts; powder stored in powder house and only sufficient amount taken underground for one day's use; total number employed, 14; recent improvements made include new mill and mill house.

Blackmeyer & Post.—This clay mine is located on the Watson road, St. Louis. The land is owned by Mrs. Barrioz, 2555 Clifton avenue, St. Louis. and leased by Blackmeyer & Post, who maintain offices in the Wainwright Building, St. Louis. I visited the mine on April 15th, and have the following to report: Depth of shaft, 80 feet; fence around top shaft; timbering in shaft and mine in good condition; steam power used for pumps and hoisting; cages in good condition; three-fourth inch wire ropes used in hoisting; trap doors on shaft; mule haulage in mine; clay augers used; ventilation good and supplied by two shafts; powder kept safe and only enough taken underground for immediate use; number of men employed on date of inspection, 12.

Prime Western Spelter Company.—This company operates a clay mine through its lessee, F. Labor, at Watson and Filer avenues in St. Louis. I visited the mine on April 15th and made report of my inspection, as follows: Mine is worked on the incline plan; timbering in mine in good condition; gasoline engine used for pumping; mule haulage; dirt augers; ventilation not good, but company is sinking an air shaft, which will remedy this defect; powder kept above ground and only enough for immediate use taken underground; number of men employed, five. The present workings are fifty feet from the surface on a face. All clay mined is worked on contract, the miners receiving 25 cents per ton for mining and loading clay in cars. The miners average $2.50 per day.

Grandview Fire Clay Mine.—This mine is operated by A. A. Vancleve, who leases from the Brockschmidt estate. Eight acres are controlled by the operator and the location of the mine is at Dale and Croft avenues, in St. Louis. I visited this mine on April 15th and have the following report to make: Mine is worked on the incline plan; timbering in mine good; mule power used; clay augers used; ventilation supplied by two air shafts, and good; powder safely stored and only enough taken underground for immediate use; number employed, three.

Mr. Vancleve also operates a mine at Arrow Station, 6500, Old Manchester Road, St. Louis. This mine is known as Arrow No. 1, and is leased from J. Truin of St. Louis. I visited the mine on April 15th and have the following to report: Depth of shaft, 45 feet; building around top of shaft; shaft and mine timbered and in good condition; horse-power used for hoisting and steam for pumping; cages are hoisted and lowered in shaft by a chain and are without safety catches; no trap doors; I ordered safety catches and trap doors installed at once; clay augers are used; ventilation good and supplied by two air shafts; powder stored on top and only enough for immediate use taken underground; number of men employed, six.

Henry and Hiram Roberts operate a clay mine at Billion and Sulphur avenues, in St. Louis. I inspected their mine on April 20th and report as follows: Depth of shaft, 75 feet; doors around top of shaft; timbering in shaft and mine good; horse hoist used; cages not used, but I ordered to install same; five-eighth inch steel cable in good condition; haulage by cars pushed by men; ventilation supplied by furnace, not very good; I ordered an air shaft sunk; powder safely stored and only enough taken in mine for immediate use; number of men employed, four miners and three top men.

Mississippi Glass Company.—This company operates a clay mine under first lease from George Cobian and Mr. Bailey. The mine is located on Sublet avenue, in St. Louis, and the operating company maintains offices at Sublet and Taylor avenues, in St. Louis. I made an inspection of the mine on April 16th and have the following to report: Depth of shaft, 97 feet; shaft inclosed; timbering in shaft and mine in good condition; gasoline engine used for hoisting; cages with three-fourth inch cable used and in good condition; safety catches not attached and I ordered them put on; trap door in good order; haulage done by mules; clay augers used; ventilation good, two air shafts; powder kept above ground and only enough for immediate use taken into the mine; number of men employed, eleven.

Mitchell Clay Manufacturing Company.—The clay mine of this company is located at West Park and Pierce avenues, St. Louis. The company leases 27 acres from the Ewing estate. The officers of the company are S. Mitchell, president; S. F. Mitchell, vice-president; J. W. Garnett, secretary. I visited the mine on April 14th and report as follows on the work of my inspection: The mine is worked by a 700-foot incline; mine is timbered and in good condition; steam power for hoisting and mules used for haulage; dirt augers used; ventilation supplied by two air shafts and is good and sufficient; powder stored on top and only enough for immediate use taken underground; number of men employed, 13.

Wade Brothers operate the Hallock clay mine under lease. This mine is located near Tower Grove avenue and Arsenal street, St. Louis. I made an inspection of same on April 20th and report as follows: Mine worked on incline plan; timbering in mine good; mule haulage in mine; dirt augers used; ventilation good and sufficient, being supplied by two air shafts; powder safely stored and only enough for immediate use taken into the mine.

Hydraulic Pressed Brick Company.—This company is operating a clay mine at King's Highway and McRea avenue, in St. Louis. I made an inspection of the mine on April 13th and report as follows: Depth of shaft, 65 feet; fence around top of shaft; timbering in shaft and mine good; cages in use with safety catch appliances; three-fourths inch cable in good condition; trap door not used, and I ordered same installed; dirt augers used; ventilation supplied by a three-foot electric fan; only enough powder kept underground for immediate use; number of men employed, twenty. This mine, like most all of the clay mines I inspected, is worked with a great deal of care. The drifts are about nine feet in width and all closely timbered. The manner of working these drifts is modern and to the best advantage, and I believe, reasonably safe.

Hydraulic Fire Clay Company.—The location of this clay mine is at Buthold and Macklin avenues, St. Louis. A. C. Steuver, the proprietor, controls thirty acres of land. On date of inspection, April 14th, I found the following. Depth of shaft, 90 feet; shaft top fenced; timbering in shaft and mine in good condition; electric power used; a five-eighth inch cable used in hoisting was in good condition; there are safety catches on the cages and they are in good order; a trap door was not provided over shaft and I ordered one put on; haulage in mine done by mules; powder stored in magazine; total number of men employed in the mine and on top, 63; recent improvements made, one new air shaft. This is a large manufacturing concern making clay products of every description.

Laclede Christy Fire Clay Company.—This company controls twelve acres of land on the Hanley road, near Manchester road and Sulphur avenue, St. Louis. The mine is operated by Jamison and French. I inspected same on April 21st and report as follows: Depth of shaft, 65 feet; fence around top of shaft; in shaft and mine; timbered; gasoline engine used for power; cages in use with safety appliances; five-eighth inch cable in good order; trap door in good working order; haulage in mine by mules; ventilation supplied by natural means; two air shafts sunk; powder stored in magazine and only small quantity taken into the mine; number of men employed, nine.

Jonesburg Clay Pit Mine.—This mine is located one mile south of Jonesburg in Warren county. The operator and landowner, Mrs. Louisa Amman, resides at 1907 Guyer avenue, St. Louis. On date of inspection, December 16th, I found eight men at work in this mine. A spur track connects the mine with the Wabash Railroad over which road the clay is shipped. Mining operations are on the pit plan and with reasonable safety. The superintendent is Henry Felbring.

DIRECTORY OF MINES.

DIRECTORY OF THE MINES IN THE STATE OF MISSOURI.

LEAD AND ZINC--WESTERN DISTRICT.

JASPER COUNTY.

Owner of land.	Lessee.	Address.
Acme Lead & Zinc Co		Webb City.
" " "	Church, Mitchell M. Co	Joplin.
" " "	Jack Snipe Mg. Co	"
American Z. L. & S. Co		Carterville.
" " "	Criterion Mg. Co	Joplin.
" " "	Alabama No. 1 Mg. Co	"
" " "	Durston Mg. Co	Carterville.
" " "	John R. Hohms	Joplin.
" " "	Richvale Mg. Co	"
" " "	Feline Mg. Co	"
" " "	F. Houser	"
" " "	M. Cruzan Sludge Co	Prosperity.
" " "	Swayback Mg. Co	"
" " "	Wooley Mg. Co	"
" " "	C. C. Humes	"
" " "	Triplett Sludge Co	"
Amsden, Electa F		Carthage.
" "	R. A. Mooneyhan	"
" "	Texhoma Mg. Co	"
Armil, Jackson		Joplin.
" "	Ruth Mg. Co	"
Ashcraft & Reynolds		Webb City
" "	Providence M. & M. Co	" "
" "	Engineers Zinc Co	" "
" "	South Portland M. Co	Joplin.
Avondale L. & M. Co		Carthage.
" "	Jubilee Mg. Co	Carl Junction.
" "	Moler & Smith L. & Z. Co	" "
" "	Lehigh Zinc Mg. Co	Joplin.
" "	A. R. Allen Mg. Co	Carl Junction.
" "	Pee Wee Mg. Co	" "
" "	Edward R. Hall	" "
" "	Carl Junction M. Co	" "
" "	Teddy Mg. Co	" "
Aylor, A. W		Eldorado.
" "	Eclipse Mg. Co	Alba.
" "	Montclair Mg. Co	Webb City.
" "	Stephens & Co	" "
" "	Goodday Mg. Co	" "
" "	Manness Mg. Co	" "
Aylor, J. W		Carthage.
" "	Dominion L. & Z. Co	Webb City.
" "	Ruby Mg. Co	" "
" "	Avondale L. and Z. Co	" "
" "	Elizabeth Mg. Co	" "
" "	J. R. Smouse	Carterville.

JASPER COUNTY—Continued.

Owner of land.	Lessee.	Address
Aylor, J. W	Lucky Budge Mg. Co	Carterville.
" "	Spanaflora Mg. Co	"
Baker, H. M		Carthage.
" "	Vantage L. and Z. Co	Webb City.
" "	Minor Heir Mg. Co	Joplin.
Banner Inv. Co		Kansas City.
" "	W. C. Eyster	Joplin.
" "	Blake Mg. Co	"
Beacon Land Heirs		"
" " "	E. L. Burtiss	"
Beers Syndicate		"
" "	Criterion Mg. Co	"
Belleville L. & M. Co		"
" " "	M. H. Roberts	"
" " "	Midnight Mg. Co	Zincite.
Boston-Duenwig M. Co		Webb City.
" " "	Wilson Mines Co	Joplin.
Bowen Estate, Jno. M		Alba.
" " "	Federated M. & M. Co	Joplin.
" " "	Isabell Mg. Co	Carterville.
" " "	Dana Mg. Co	Webb City.
Boyd, H. B		Sarcoxie.
" "	Optimo L. & Z. M. Co	"
" "	Cameron Mg. Co	"
" "	J. W. Boyd Mg. Co	"
" "	Quillen & Dobbs	"
Brooks Estate		Carthage.
" "	DeGraff Brothers	Joplin.
Butler, R. F		Los Angeles, Cali
" "	Frank Williams	Carthage.
" "	Little Persimmon M. Co	"
Byrd, Chas. A		Webb City.
" "	Glass Zinc Mg. Co	Joplin.
" "	Big Stick Mg. Co	Webb City.
" "	Mackinaw Zinc M. Co	Joplin.
" "	J. T. Robinson Mg. Co	Webb City.
" "	Thornton Mg. Co	Joplin.
" "	The Good Mg. Co	Webb City.
" "	Bird Dog Mg. Co	" "
" "	Old Dominion Mg. Co	Joplin.
Bradford-Kansas City Z. Co		Webb City.
" " " "	Disbrow Mg. Co	" "
" " " "	Daylight Mg. Co	" "
" " " "	Bird Dog Mg. Co	" "
" " " "	Dinger Mg. Co	" "
Cameron, F. K		Marietta, Ohio.
" "	Cameron Mg. Co	Joplin.
Campbell, James		St. Louis.
" "	Chicago-Joplin M. Co	Webb City
Campbell, Barbee & O'Connor		Joplin.
" " "	John G. Dinkelbihler	"
Carrick & Gage		Diamond.
" "	Log Cabin Mg. Co	Independence.
" "	Geo. Donallen	Diamond.
Carter, H. E. & S. E		Webb City.
" " "	Young & St. Paul Mg. Co	Joplin.
" " "	McDonald & Co	Carterville.
Center Creek Mg. Co		Webb City.
" " "	Marcedes Mg. Co	Joplin.
" " "	W. D. Burns	Webb City
" " "	Viaduct Mg. Co	" "
" " "	S. Y. Ramage	" "
" " "	Southtown M. & M. Co	" "

JASPER COUNTY—Continued.

Owner of land.	Lessee.	Address.
Chase, F. A		Providence, R. I.
" "	Royle Mg. Co	Duenweg.
" "	M. & B. No. 2 Mg. Co	"
" "	Helen Sludge Co.	"
" "	Little Hatchett M. Co	Carthage.
Chew, Phil		St. Louis.
" "	Mercantile Metal M. Co	" "
" "	J. J. Anderson	Webb City.
Chinn, E. J. & C. R		" "
" " "	J. W. & B. C. Aylor	" "
" " "	Gobbler Mg. Co	" "
" " "	Eleventh Hour M. Co	Prosperity.
" " "	Belles & Co	"
" " "	Geo. W. Glade	Joplin.
" " "	Endeavor Mg. & Inv. Co	"
Claycomb, S. H		"
" "	Federated M. & M. Co	"
" "	General Z. & L. Co	"
Connor Realty & Murphy Inv. Co		"
" " " "	Prairie Chicken Mg. Co	"
Connor Est. & Connor Realty Co		"
" " " "	Sawyer & Mederie	"
" " " "	Ten O'Clock Mg. Co	Webb City.
" " " "	Yates & Joseph	Joplin.
" " " "	Highgrade Mg. Co	Galena, Kas.
" " " "	Yale & Barbee	Joplin.
" " " "	Trimore Mg. Co	"
" " " "	John D. Lead & Zinc Co	Carthage.
" " " "	Long M. & M. Co	Joplin.
Conqueror Zinc Cos		"
" "	Osyka Mg. Co	"
" "	Bristow & Company	"
Cosgrove, Henrietta		"
" "	Frank Strohm	"
" "	Carnation Mg. Co	"
" "	Marvel Mg. Co	"
" "	Henrietta Mg. Co	"
Crowncrest Z. & L. M. Co		"
" " "	Eureka Mg. Co	"
Cunningham, Thos. W		"
" "	D. S. & Y. Mg. Co	"
Continental Z. Co		"
" "	Jack Howard Z. M. Co	"
" "	E. J. Clarke & Co.	Brookfield.
" "	Brown Mg. Co	Joplin.
" "	Little Pearl Zinc Co	"
" "	Blair Mg. Co	"
" "	H. R. Drury	"
" "	Lycan-Stilwell & Co	Webb City.
" "	Temagami Mg. Co	Cleveland, O.
" "	Kohinoor Zinc Co	Joplin.
" "	W. Campbell & Co	"
" "	W. H. Mahoney & Co	"
" "	Captain Mg. Co	"
" "	Sheldon Mg. Co	"
" "	Cowhead Mg. Co	"
" "	Wright & Co	"
" "	George Robinett	"
" "	George Lurwick	"
" "	Morris-Bowman & Co	"
" "	Federated M. & M. Co	"
Daugherty, Davey, Kane & McMillan		Carterville.
" " " "	Harry Tibbens	"

JASPER COUNTY—Continued.

Owner of land.	Lessee.	Address.
Daugherty, Davey, Kane & McMillan	Charter Oak Mg. Co	Joplin.
" " " "	Campbell & Co	Carterville.
" " " "	Brewer-Black & Co	"
" " " "	F. M. Carson	"
" " " "	Old Dominion M. Co	Joplin.
" " " "	Lee Moss & Co	Carterville.
" " " "	McKnight Bros	"
" " " "	Wade & Company	"
" " " "	H. T. Talbott	"
" " " "	Jackson & Co	"
Daugherty-Davey & Daugherty		"
" " "	Ed. Gilbreath	"
" " "	Irwin & Co	"
" " "	Garnett Mg. Co	Joplin.
Davey, Thos. N.		Carthage.
" "	Davey Crockett M. Co	Carterville.
" "	Vesuvius Mg. Co	Webb City.
Elliott, C. E.		Oronogo.
" "	Old Judge M. Co	"
" "	Red Wing Mg. Co	"
Empire Zinc Co		Joplin.
Excelsior Z. & L. Co		"
" "	Gouvenuer L. & Z. Co	"
Federated M. & M. Co	Federated M. & M. Co	"
Fox Heirs		Oronogo.
" "	Red Fox Mg. Co	Alba.
" "	Rescue Mg. Co	"
Fulkerson, Harper & Graves		Joplin.
" " "	L. Reynolds	Kansas City.
" " "	Victoria Mg. Co	Joplin.
General Z. and L. Co		"
" " "	Federated M. & M. Co	"
" " "	Eleven O'Clock Mg. Co	"
Geneva M. & L. Co		Webb City.
" "	Edgar County Mg. Co	Paris, Ill.
" "	Federated M. & M. Co	Joplin.
" "	White Swan Mg. Co	"
" "	Pole Star Mg. Co	"
Glover & Taylor		"
" "	Old Dominion Mg. Co	"
" "	Morse Mg. Co	"
" "	W. C. Burr	"
" "	Old Times Mg. Co	"
Goucher, D. R.		Carthage.
" "	Ravenswood Mg. Co	Chicago, Ill.
Granby Mg. and Smg. Co		St. Louis.
" " "	Oronogo Circle M. Co	Oronogo.
" " "	Pinnacle Mg. Co	"
" " "	Amalgamated Z. & L. Co	Boston, Mass.
" " "	Grace Zinc Co	Joplin.
" " "	Conqueror Zinc Cos	"
" " "	Lounetta Mg. Co	"
" " "	Omega Mg. Co	"
" " "	Underoof Mg. Co	"
" " "	Gravity Milling Co	"
" " "	Baystate Mg. Co	Boston, Mass.
" " "	Blackberry Mg. Co	Joplin.
" " "	Burress Sludge Co	"
" " "	B. W. Kennedy	"
" " "	Postal L. & Z. Co	"
" " "	Williams M. & M. Co	"
Gray, M. L. Estate		St. Louis.
" " "	Henry Weyman	Joplin.

JASPER COUNTY—Continued.

Owner of land.	Lessee.	Address.
Gray, M. L. Estate	White Leghorn M. Co	Joplin.
Gregg, H. H		"
" "	Emperor L. & Z. Co	"
" "	N. N. Moyer	Chicago, Ill.
" "	Motor Mg. Co	Joplin.
Ground & Irwin		Carthage.
" "	First National Mg. Co	"
" "	Millard Mg. Co	"
" "	Miners' Milling Co	Carterville.
" "	Chicago-Joplin M. Co	Joplin.
" "	J. H. Millard	Carthage.
Grundy Realty Co		"
" "	Geo. Staves & Co	Joplin.
Gund Mining Co		Lexington, Ky
" "	Greer Mg. Co	Webb City.
Guinn, John C.		" "
" "	Mercantile Metal M. Co	St. Louis.
" "	Osceola L. & Z. M. Co	Webb City
" "	Ground Floor Mg. Co	Joplin.
" "	Home Run Mg. Co	Webb City
" "	Electrical Z. & L. M. Co	" "
" "	Ice Plant Mg. Co	Carthage.
" "	Moark-Nemo Cons. M. Co	Joplin.
" "	McCroskey & Sanford	Webb City.
" "	King Edward Mg. Co	" "
" "	Rhea L. & Z. Co	Carterville.
" "	L. & H. 1906, Mg. Co	"
" "	Schoenherr & Walton	"
" "	Smith & Whitaker	Webb City.
" "	Meadville Mg. Co	Carthage.
Hall Heirs		Joplin.
" "	Home Talent Dev. Co	"
" "	R. L. McGee & Co	Duenweg.
Haslett & Keller		Carterville.
" "	Uncle Joe. L. & Z. Co	Springfield.
Heist, Thos. H.Estate		Pihladelphia, Pa
" " "	Fred T. Fish	Joplin.
" " "	Myrick Mg. Co	Webb City
Henderson Estate		Joplin.
" "	Marion B. Mg. Co	"
" "	Big Three Mg. Co	"
" "	Opportunity Mg. Co	"
Horton, B. H. & B. F		Carterville.
" " "	Coahuilla L. & Z. Co	Webb City.
Jackson, Jno. Inv. Co		St. Louis..
" " "	Joplin-Kentucky Z. Co	Joplin.
" " "	A. B. C. Mg. Co	"
" " "	D. L. Robinson	"
" " "	Jack Pot Mg. Co	"
" " "	Des Moines-Joplin M. Co	"
Jasper County Royalty Co		Carthage.
" " "	Lincoln M. & M. Co	Joplin.
" " "	Realization R. & I. Co	Webb City.
" " "	Wolffsheart M. & M. Co	" "
Johnson, W. E		Joplin.
" "	Grand Central M. & M. Co	"
Jones, Ruth		Kansas City
" "	Stevison-Jones & Co	Webb City.
" "	Lone Star Mg. Co	Carthage.
Joplin Cons. Mg. Co		Joplin.
" " "	Ben F. Wurzel	"
" " "	Carpenter & Co	Kansas City.
Kelley, Albert T		New York, N. Y.

JASPER COUNTY—Continued.

Owner of land.	Lessee.	Address.
Kelley, Albert T	White Dog Mg. Co	Webb City.
" "	Osceola L. & Z. M. Co	" "
" "	Realization R. & I. Co	Chicago, Ill.
" "	Dividend L. & L. Co	Joplin.
" "	Bohemian Girl M. Co	Webb City.
" "	Carbondale M. & M. Co	" "
Knol, W. A		Joplin.
" "	Miners' Milling Co	Carterville.
" "	Nowata Mg. Co	Joplin.
" "	Wills Bros	Carthage.
Lambert, Clarence et al		Joplin.
" " "	Osceola L. & Z. M. Co	Webb City.
" " "	Waneta Mg. Co	Joplin.
Land, W. G. Co		"
" "	Samson Mg. Co	Chicago, Ill.
Lanyon, R. H		Joplin.
" "	Luke and Brown	"
" "	Old Dominion M. Co	"
" "	Robertson & Allington	Alba.
Leckie, W. M		Joplin.
" "	United Zinc Cos	"
Leanord Realty Co		"
" "	Cumberland M. Co	"
" "	Bessie Mg. Co	"
" "	Striped Stocking M. Co	"
Luke, James		Carthage.
" "	Southwestern M. & D. Co	Joplin.
Luke and Ash & Co		Carthage.
" " "	Gibson Mg. Co	Webb City.
Luke, Ash, Stickney & Boggess		Carthage.
" " " "	J. E. Waddill	Kansas City.
" " " "	Jamot Brown	Joplin.
" " " "	R. C. Williams	Prosperity.
Magnet Mg. Co		Carthage.
" "	Hill Billy Mg. Co	"
" "	Red Ant Mg. Co	"
McConnell, A. B		Joplin.
" "	S. E. and Chas. Flock	"
" "	Big Kasino Mg. Co	"
Mexico-Joplin Land Co		Mexico, Mo.
" " "	Elliott, Clay & Co	Joplin.
" " "	Katherine Lease Co	"
Miami Realty & M. Co		"
" " "	Herald Z. & L. M. Co	"
Mignonette Mg. Co		Carthage,
Missouri L. & Z. Co		Joplin.
Missouri Zinc Fields Co		Webb City.
" " "	Charles T. Orr	" "
" " "	Yale Mg. Co	" "
Mitchell, J. A. et al		Carthage.
" " "	Aaron Meyer	Kansas City.
" " "	Douglas & Anderson	Joplin.
Montgomery L. & Z. Co		Pottstown, Pa.
" "	Hemphill Mg. Co	Joplin.
" "	Fenn and Co	"
Mossback Mg. Co		"
" "	Rob Roy Zinc M. Co	"
Muth, August E		Cincinnati, O.
" "	Bullfrog Mg. Co	Joplin.
Newell-Morse Royalty Co		Carthage.
" " "	Athletic Mg. Co	Joplin.
" " "	Winslow Mg. Co	Webb City.
" " "	C. C. & H. M. & M. Co	" "

JASPER COUNTY—Continued.

Owner of land.	Lessee.	Address.
Norton, E. H		Platte City.
" "	Anderson, E. L.	Joplin.
" "	Helen Mg. Co	"
" "	Red Lion Mg. Co	"
Owensboro Joplin M. Co		"
Paomo Mg. Co		"
Pike Land Co		"
" "	Nowata L. & Z. M. Co	"
Ping, S. R		Galena, Kas.
" "	Grace Zinc Co	Joplin.
" "	Grace Ping M. Co	"
Pittsburg-Missouri L. & Z. Co		"
" " "	Cecile Murphy Mg. Co	"
" " "	Harrison Mg. Co	"
Rabbit Foot Z. M. Co		New York.
" " "	Merrick G. Estabrook	Boston, Mass.
Reliance Mg. Co		Webb City.
" "	Federated M. & M. Co	Joplin.
" "	Analinda Mg. Co	Carthage.
" "	Express Z. & L. Mg. Co	Neck City.
" "	B. L. Bartholow	Joplin.
Rex, Mg. & Smg. Co		"
" " "	Sycamore Mg. Co	"
" " "	Greencastle Z. & L. M. Co	"
" " "	S. W. Dagley	"
" " "	Elizabeth Mg. Co	"
" " "	Sawyer, Mg. Co	"
" " "	Frank Nicholson	"
" " "	Benton County & Sewell M. Co	"
" " "	Warren Brewer Mg. Co	"
" " "	Quality Mg. Co	"
" " "	Belmont Mg. Co	"
" " "	Ideal Mg. Co	"
Richardson, Jesse		Alba.
" "	Quick Seven Mg. Co	Neck City.
" "	Little Frances Mg. Co	" "
" "	1909 Mining Co	" "
Roaring Springs Land Co		Joplin.
" " "	Wautauga Mg. Co	"
" " "	Conservative L. & Z. M. Co	"
" " "	Crossman & Co	"
Robb, John B		"
" "	Chas. Rice & Co	"
Rochester L. and L. Co		Webb City.
" " "	Federated M. & M. Co	Joplin.
" " "	C. C. & H. M. & M. Co	Webb City.
" " "	Edgar-Carl Eclipse Lease	" "
" " "	C. C. Humes & Co	" "
" " "	Bull Dog Mg. Co	" "
" " "	Red Dog Mg. Co	" "
" " "	Jasper Sludge Co	" "
Royalty L. & M. Co		" "
" "	Barr, Gloninger & Walsh	" "
" "	G. L. Bobson	" "
" "	Bonni Patti Mg. Co	" "
Schifferdecker, Charles		Joplin.
" "	Kitty Mack M. Co	"
" "	Paragon L. & Z. Co	"
" "	Old Dominion M. Co	"
" "	West 7th Street M. Co	"
Shoemaker, E. B		"
" "	Stokes, Clark & Shoemaker	"
Smith Heirs		Carl Junction.
" "	Moler-Smith L. & Z. Co	" "

JASPER COUNTY—Continued.

Owner of land.	Lessee.	Address.
Smith Heirs	Lehigh Zinc Co	Joplin.
Smith, Gilbert L.		Vineyard Haven, Mass.
" "	William A. Nye	Bournedale, Mass.
" "	Sunflower L. & Z. M. Co	Webb City.
South Joplin L. & Z. Co		Kansas City.
" " "	Magnolia Mg. Co	Joplin.
Sponable, F. M		Alba.
" "	East Alba Mg. Co	"
" "	Federated M. & M. Co	Joplin.
Staples, Marian		"
" "	Kramer, H. D	"
" "	Kabush & Co	"
Stevison-Rogers L. & Z. Co		Webb City.
Swartz, L.		Joplin.
" "	North Joplin Mg. Co	"
Transylvania R. Co		Carthage.
" "	United Zinc Cos	Joplin.
Trinity, Z. L. & S. Co		New York.
" " "	O. F. and L. Mg. Co	Duenweg.
" " "	Dauphin Mg. Co	Webb City.
" " "	Criterion Mg. Co	Joplin.
" " "	Carmean-Squires & Co	Carthage.
Underwriters Land Co		"
" "	Goldenglow Mg. Co	Webb City.
" "	American Beauty M. Co	" "
" "	C. C. & H. M. & M. Co	" "
Unex L. & Z. Co		Carthage.
" "	Criterion Mg. Co	Joplin.
" "	Cadwell-Allen M. Co	Carterville.
United Zinc Cos		Joplin.
" "	Joplin Sludging Co	"
" "	King & Queen Mg. Co	"
" "	Geo. H. Playter	"
" "	Conqueror Z. & L. Co	"
" "	J. H. Pittman	"
Venango Royalty Co		Carthage.
" "	Penn Zinc Co	"
Walker, Jos. I		Duenweg.
" "	Sayers Mg. Co	Webb City.
Ware, Bowman & Scott		Jerseyville, Ill.
" " "	Oakwood Mg. Co	Webb City.
" " "	Dividend L. & L. Co	Joplin.
" " "	Little Princess M. Co	Webb City.
" " "	Genesee Mg. Co	" "
" " "	Silver Leaf Dev. Co	" "
Weaver, J. W		Carthage.
" "	Weaver-Tri City M. Co	"
Weyman, Henry		Joplin.
What Cheer Zinc Co		Providence, R. I.
" " "	Boston Get There Z. Co	" "
Wheeler, J. M		Alba.
" "	Mrs. E. A. Norris	Joplin.
" "	Sewell Mg. Co	"

LAWRENCE COUNTY.

Owner of land.	Lessee.	Address.
Boston-Aurora Z. Co		Webb City.
" "	Stone & Qualls	Aurora.
" "	E. M. Apple & Co	"
Buddike, Wm		St. Louis.
" "	Stone & Ripper	Aurora.
Cleveland Aurora L. M. Co		Cleveland, O.
Decatur L. & Z. Co		Aurora.
" "	E. K. Johnston & Co	"
Federal Z. & L. Co		Webb City.
Gundling, Harry		Joplin.
" "	Silver Star Mg. Co	"
Jones, C. E		Springfield.
" "	Missouri Hydraulic Co	Aurora.
" "	Gordon-Emmons & Co	"
" "	Aurora Mg. Co	"
Kentucky Mg. Co		"
" "	W. A. McCullough	"
" "	Sphalerite Mg. Co	"
Midland Mg. Co		"
" "	Wallace & Salts	"
Newman & Co		Pierce City
" "	J. W. Reynolds	Aurora.
" "	Hunter & Co	"
" "	Hudson & Co	"
" "	Reynolds & Sparks	"
Pruitt, B. W		Stotts City.
" "	Mt. Vernon Mg. Co	Mt. Vernon.
" "	Keystone Mg. Co	Stotts City.
" "	Mystic Valley Co	" "
Robberson, Mrs. E. J		Springfield.
" "	Coleman Bros	Aurora.
" W. W		Stotts City.
" "	Julia West M. Co	" "
Rauch & Fischer		Chicago, Ill.
" "	W. H. Scott Mg. Co	Aurora.
Sphalerite Mg. Co		"
Stewart, P. W		"
" "	Southwest Missouri M. & M. Co	"
Tooker, C. W		Springfield.
" "	No. 4 Drill Co	Aurora.
" "	Coleman & Scott	"
United Zinc Cos		Joplin.
" "	Kansas City-Aurora M. Co	Aurora.
" "	Milton Mining Co	"
" "	Aurora Sludge Mill Co	"

NEWTON COUNTY.

Allen, J. W		Joplin.
" "	Sunrise Mg. Co	"
Chase, Geo. N		Santa Barbara, Cali
" "	Silver Plume M. Co	Neosho.
Davis, J. B. & N. Y		"
" " "	Mears M. & M. Co	"
Gormley, L. H		Pierce City.
" "	Empire Zinc Co	Joplin.
Granby M. & S. Co		St. Louis.
" "	Mears Mg. Co	Scranton, Pa.
" "	Bracken, Hughes, Dean & West	Granby.
" "	Little Boss Mg. Co	Springfield.

NEWTON COUNTY—Continued.

Owner of land.	Lessee.	Address.
Granby M. & Co	Woodcock & Sons	Granby.
" "	Fortune Teller M. Co	"
" "	Dick Stapp M. Co	"
" "	Goldenrule M. Co	"
" "	Spurgeon Mg. Co	Spurgeon.
Haines Land		Cincinnati, O.
" "	Adam Scott	Joplin.
" "	Mary E. Mg. Co	"
Hoge, W. V		Wheeling, W. Va.
" "	A. J. Morrow, Jr	Neosho.
" "	T. J. McKenney	Joplin.
" "	Hunt & Co	"
Ideal Mg. Co		Webb City.
" "	Blizzard & Vaughn	Joplin.
Leake, Lottie C		Aurora.
" "	Clark Craycroft	Joplin.
Mattes Bros		"
" "	Duquesne Mg. Co	"
McCown Est		Philadelphia, Pa.
" "	Adam Scott & Co	Joplin.
" "	U. G. Wilson	"
Milne, Morrow & Baker		"
Newman, Albert		"
" "	Milne, Drake & Mitchell	"
" "	Silver Moon Mg. Co	Racine.
O'Neill, Jas. Est		Webb City.
" "	Silver Dime Mg. Co	" "
St. Paul Mg. Co		Joplin.
" "	Dahnke, Painter & Tatem	Granby.
" "	Skaggs & Pearson	"
" "	Aladin L. & Z. Co	Joplin.
" "	Don McRuer	"
Zeta Land & Mg. Co		Independence.
" " "	Clark Craycroft	Joplin.

GREENE COUNTY.

Duncan, J. K. P		Ashgrove.
" "	Causer & Jones	"
Reitz, P. J		Mumford.
" "	Badger L. & Z. Co	Springfield.
The Daisy M. & M. Co		Springfield.
" " "	W. Martin Jones, Jr	Rochester, N. Y.

LEAD AND ZINC--EASTERN DISTRICT.

FRANKLIN COUNTY.

Name of Company.	*Postoffice Address.*
Wrisburg, C. G. & E. F	St. Clair

JEFFERSON COUNTY.

Valle Mining Co	Valles Mines

MADISON COUNTY.

Eastern Lead Company	Fredericktown
North American Lead Co	Fredericktown
Mine LaMotte L. & S. Co	Mine LaMotte
Phoenix Land Co	St. Louis

ST. FRANCOIS COUNTY.

Des Lodge Consolidated Lead Co	Des Lodge
Doe Run Lead Co	Doe Run
Federal Lead Co	Flat River
St. Joe Lead Co	Bonne Terre
St. Louis Smelting & Refining Co	St. Louis

WASHINGTON COUNTY.

Higginbotham, Z. F. & Son	Fertile
Point Milling & Mfg. Co	St. Louis
Renault Lead Co	St. Louis
Rose, C. C	Sullivan
Washington Land & Mg. Co	St. Loui

CLAY MINES.

Name of Operator.	Postoffice Address.	County.
Aluminum Flake Co	Truesdale	Warren.
Bausch, Frederick E	Clayton	St. Louis.
Blackmer & Post Pipe Co	St. Louis	" "
Connell, J. P	Glencoe	" "
Evans & Howard Fire Brick Co	St. Louis	" "
Gulken, Theodore	" "	" "
Highlands Fire Clay Co	" "	" "
Hydraulic Press Brick Co	" "	" "
Jonesburg Clay & Mg. Co	Jonesburg	Montgomery.
Krummel & Buckner F. Clay Co	St. Louis	St. Louis.
Laclede-Christy Clay Products Co	" "	" "
Mexico Brick & Fire Clay Co	Mexico	Audrain.
Mitchell Clay Mfg. Co	St. Louis	St. Louis.
Ouachita Coal & Clay P. Co	Versailles	Morgan.
Parker-Russell M. & M. Co	St. Louis	St. Louis.
Roberts & Son	" "	" "
St. Louis Vit. Fire Brick Co	" "	" "
Versailles Fire Brick & Clay Co	Versailles	Morgan.
Wade Bros. Cons. Co	St. Louis	St. Louis.
Western Stove Lining Co	Mexico	Audrain.

IRON.

Name of Operator.	Address.	County.
Mo. Copper Mt. Mg. Company	Sullivan	Franklin.
Landau, S	Keener	Butler.
Northwestern Cons. L. L. & I. Co	Wappapello	Wayne.
Puxico Iron Company	Puxico	Stoddard.
Ruby Mt. Iron & Furnace Co	Chaonia	Wayne.
Smallinger, W. H	Iron Mountain	St. Francois.
Wayne Iron & Lumber Co	Greenville	Wayne.

COAL.

ADAIR COUNTY

Name of Company.	*Postoffice Address.*
Arctic Coal Company	Novinger.
Big Creek Coal Company	Kirksville
Consolidated Stahl Coal Co	Stahl
Great Northern Fuel Co	Novinger
Hazel Creek Coal Co	Novinger
Ivie, J. M. and Sons	Kirksville
Kansas City Midland C. & M. Co	Novinger
Lee, John	Connelsville
Manufacturers' Coal & Coke Co	Connelsville
Rombauer Coal Company	Novinger
Star Coal Company	Kirksville

AUDRAIN COUNTY.

Audrain Coal Company	Vandalia
Davidson, Henry	Laddonia.
Lawder-Peterson Coal Co	Farber
Martinsburg Coal Co	Martinsburg
Self and Williams	Laddonia
Standard Coal & Mining Co	Vandalia

BARTON COUNTY.

Betz, Jacob	Liberal
Cackley, R. E	Milford
Clark Bros	Lamar
Creekmore, W. P	Liberal
Correlli Coal Co	Joplin
Davis Coal Company	Mulberry, Kan.
Geivet, W. H	Milford
Lasley, W. B	Minden Mines
Lavery, W. J	Liberal
Lawrence, Frank	Milford
Mulkins, T. E	Milford
Orahood, A. J	Lamar
Orahood, Wm	Lamar
Patterson, W. W	Minden Mines
Peck and Brummett	Lamar
Pittsburg Coal Co	Englevale, Kan.
Pittsburg & Midway Coal M. Co	Midway, Kan.
Pullen & Sons	Minden Mines
Stephenson, J. J. Coal Co	Pittsburg, Kan.
Stone, C. T	Milford
Taylor, R. J	Milford
Wear Coal Company	St. Louis
Western Coal & Mining Co	St. Louis

BATES COUNTY.

Amsterdam Coal Company	Amsterdam
Atlas Coal Mining & Merc. Co	Rich Hill
Ayer, U	Rich Hill
Baker, Jos	Amsterdam
Carr Coal Company	Rich Hill
Decker, H W	Amoret
Diller, Sam	Appleton City
Dunkerly Coal Company	Worland
Fleming Coal Company	Rich Hill
Harris, J. A	Worland
Hair, Miller & Bradford	Foster
Henley, R. J	Sprague
Heckadon, P. L	Foster
Holland Coal Company	Rich Hill
Johnson, King	Hume
McClenden, Harry	Rockville
McConnell, W. A	Foster
Metzler & Shelton	Foster
Pearson Bros	Rich Hill
Peeler, D. D	Appleton City
Ritchie, H. C	Rich Hill
Scott, Thos. B	Foster
Smalley, J. M	Amsterdam
Sprague Coal Company	Sprague
Tarver, E. R	Rich Hill
Tatley, J. V	Worland
Wear, Emmett	Rich Hill

BOONE COUNTY.

Davis & Watson	Columbia
Prather, W. R	Columbia
Davis, Isaak R	Brown's Station
McGee, Lonnie	Centralia
Shock, R. L	Columbia
Sutton, W. C	Columbia

CALDWELL COUNTY.

Caldwell Coal Company	Hamilton

CALLAWAY COUNTY.

Bell, Eli	Fulton
Clarke, Geo. W	Millersburg
Fulton Coal Company	Fulton
Fulton Fire Brick Company	Fulton
Harris & Trigg	Fulton
Morsinkoff, John A	Fulton
Nickolson, C. M	Stephens Store
Reed, J. F	Fulton
Simmons, J. W	Fulton
Skelley, E	Stephens Store
Smith, David	Fulton
Sultzer, J. W	Fulton

CARROLL COUNTY.

Cowan, R. M	Hale
Kenyon, J. A	Bosworth
Odell, James	Hale

CASS COUNTY.

Creighton Tile & Coal Co	Creighton

CHARITON COUNTY.

Collett, Lizzie M	Keytesville
Dooley, J. A	Keytesville
Kahler, W. J	Mendon
Kingsley Brothers	Keytesville
Rothville Coal Company	Rothville
Strickland, J. C	Rothville
Watson, S. E	Keytesville

CLAY COUNTY.

Missouri City Coal Co	Missouri City

COLE COUNTY.

Name of Company.	*Postoffice Address.*
Bandelier, S. and A	Jefferson City

DADE COUNTY.

Hickman, O	Golden City
Stout, W. A	Lockwood
Windes, W. H	Lockwood

GRUNDY COUNTY.

Trenton Mining Company	Trenton

HENRY COUNTY.

Anaconda Coal Company	Deepwater
Barnhart, E. A	Clinton
Bowen Coal Company	Windsor
Brush Coal Company	Deepwater
Dickey, W. S	Kansas City
England, James Coal Co	Deepwater
Hughes, W. E	Windsor
Hurst, John Coal Co	Deepwater
Lane, E. M	Clinton
Lewis Coal Company	Lewis Station
Parks, A. F	Calhoun
Pharis and Rivers	Clinton
Reese, Wm. D	Deepwater
Rush, Wm. H	Deepwater
Standard Coal Company	Deepwater

HOWARD COUNTY.

Collins, W. H	Fayette
Pitney, Alex	Higbee
Pitney, O. S	Higbee
Rohr, O. B	Fayette

JOHNSON COUNTY.

Burns, M. F	Knobnoster
Bullock, P. H	Montserrat
Bullock, D. A	Warrensburg
Jacobs, W. D	Warrensburg
McGrath, John	Knobnoster
Meily, M. B	Warrensburg
Millard, Frank	Warrensburg
Sutherland Coal Company	Sutherland

LAFAYETTE COUNTY.

Arnschild, John	Concordia
Aull, Edward Coal Co	Lexington
Bell & Greer	Lexington
Boedeker Coal Company	Higginsville
Bonanza Coal Company	Higginsville
Cary, B. F	Odessa
Canterbury and Griffith	Higginsville
Clay, Tom	Higginsville
Corder Coal Company	Corder
Diamond Coal Company	Corder
Dover Coal Company	Lexington
Duncan, Harvey	Lexington
Emison, S. G	Higginsville
Fallman, Ed	Wellington
Farmers' Coal Company	Higginsville
Gann & Bledsoe	Odessa
Hohenwald Brothers	Corder
Independence Coal Co	Napoleon
Kratz & Son	Higginsville

LAFAYETTE COUNTY—Continued.

Name of Company.	*Postoffice Address.*
Labor Exchange No. 305	Wellington
Lanning-Harris Coal & Grain Co	Kansas City
Martens, Jacob	Concordia
McGrew Coal Company	Lexington
Pointer, C. S	Mayview
Plattenburg Coal Company	Lexington
Rust, W. C	Concordia
Sebastian, R	Higginsville
Sipe, C. C. & Son	Lexington
Stolen, Anton	Corder
Stoll Brothers	Higginsville
Summers, M. W	Alma
Tyler, J. W	Aullville
Van Guilder, E. M	Kansas City
Waverly Brick & Coal Co	Waverly
Wegener, J. C	Higginsville
Western Coal & Mining Co	St. Louis
Whitley, Scott	Lexington
Wright, S and F	Lexington

LINN COUNTY.

Barr, Chas	Brookfield
Bucklin Coal Co	Bucklin
Landreth Coal Co	Marceline
Marceline Coal & Mining Co	Marceline
Sheehan, J. E	Brookfield
Wine, G. C	Brookfield

LIVINGSTON COUNTY.

Cox, Ira B	Chillicothe
Fulwood, Wm	Mooresville

MACON COUNTY.

Badgerow, Chas. & David	Callao
Central Coal & Coke Company	Kansas City
Dennis, J. H	Macon
Hurd & Hurd	Macon
Isaacson & Underwood	Callao
James Brothers	Bevier
Jones, Jno. H	Bevier
Lehman, H. A	College Mound
Lunsford, H. W	Macon
Northwestern Coal & Mining Co	Bevier
Parry, J. P	Bevier

MONITEAU COUNTY.

Monarch Coal & Mineral Co	Barnett

MONROE COUNTY.

Gilbert, J. B	Paris

MONTGOMERY COUNTY.

Biddleman, Wm	Wellsville
Hammitt, E. R	Wellsville
Noel, Buford	Wellsville
Whitehead and Sons	Wellsville

MORGAN COUNTY.

Ouachita Coal & Clay Co	Versailles

PLATTE COUNTY.

Home Riverside Coal Co	Leavensworth, Kan.

PUTNAM COUNTY.

Name of Company.	*Postoffice Address.*
Baugher, A. W	Mendota
Hawkins, John	Mendota
Humphreys, Richard	Livonia
Jones, Geo. F	Coatsville
Means & DeGarmo	Unionville
Mendota Coal Company	Mendota
Mo. Mg. Mfg. and Merc. Co	Unionville
Moore Coal Company	Unionville
Robbins, J. A	Livonia
Rogers Coal Company	Mendota
Seavey & Triplett	Unionville
Shelton, W. E	Unionville
Stevens, Americus	Livonia

RALLS COUNTY.

Clark Coal Company	Perry
Dixon, Joseph	Perry
Ralls County Coal Co	Perry
Smith, Henry and Sons	Perry
Tighe Coal & Mg. Co	Perry

RANDOLPH COUNTY.

Bowder, John	Cairo
Bradley, D. T	Huntsville
Burge Bros	Huntsville
Clarke, D. E	Huntsville
Cronan, John M	Moberly
DeMart & Clam	Yates
Davidson, D. C	Moberly
Diamond Coal Company	Huntsville
Durham, Dan	Jacksonville
Esry, Andrew	Moberly
Eravi, James	Moberly
Goett, P. J	Moberly
Jackson & Harris	Clifton Hill
McKiernan, W. H	Moberly
Mitchell, Coal & Mining Co	Huntsville
Millburn Bros	Clifton Hill
Morris, Geo. W. and Sons	Huntsville
Northern Central Coal Co	Higbee
O'Toole, Joseph	Moberly
Pilkington, John	Moberly
Slaughter, J. M	Higbee
Smith Heirs	Fremont, Neb.
Vaughn, W. T	Moberly
Ward, Henry	Moberly
L. B. Williams	Moberly
Williams & Rupp	Moberly

RAY COUNTY.

Blair, Hugh	Polo
Brockman, J. C. & A. B	Camden
Calnen & Blair	Richmond
Central Coal & Coke Co	Kansas City
Clark, Jacob	Hardin
Collier, J. W	Hardin
Crawford-Wilson Coal Co	Richmond

RAY COUNTY—Continued.

Name of Company.	*Postoffice Address.*
Doran, John	Hardin
Fowler Coal & Mg. Co	Richmond
Gant, J. M	Norborne
Huston, Fred	Hardin
Hymer, O. P	Richmond
Loeven, M. J	Hardin
Maple Hill Coal Co	Richmond
Martin-Hubbell-Osborne C. Co	Kansas City
McCorkendale, J. R	Norborne
McDaniel, J. L	Richmond
Mercantile Coal & Mining Co	St. Joseph
Odell, E. R	Richmond
Ottman & Nelson	Richmond
Pence & Calnen	Richmond
Pickering Coal Company	Richmond
Richmond and Camden Coal Co	Richmond
Ray County Coal, Brick & Tile Co	Norborne
Rice, Perry	Richmond
Sprowl, John	Norborne
Shea, Thos. & Sons	Richmond
Turner & Son	Orrick
Thompson, Geo. W	Richmond
Vibbard Coal Co	Vibbard
Ward, W. O	Richmond
Watson, James N	Richmond
Woodruff, John	Norborne

SALINE COUNTY.

Garver, J. N	Sweet Springs

SCHUYLER COUNTY.

Golston, Ira	Queen City
Hymes, J. W	Coatsville
Long, G. B	Coatsville
Mock, Clarence	Coatsville
Watson, Jesse	Coatsville

ST. CLAIR COUNTY.

Cook, James M	Appleton City
Collins, J. C	Lowry City
Greathouse, T. L	Osceola

SULLIVAN COUNTY.

Milan Coal Company	Milan

VERNON COUNTY.

Brown, A. S	Moundville
Carbon Coal Company	Panama
Davis, James	Walker
Ewing, W. H	Walker
Flake, J. W	Schell City
Jones Coal Company	Rich Hill
Koch, Herman	Walker
Prewitt, Wm	Nevada
Palmer, D. L	Schell City
Tuttle & Neagle	Walker

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